EVALUATION OF AN ONLINE PARENT TRAINING IN SPANISH FOR HISPANIC PARENTS OF CHILDREN WITH AUTISM SPECTRUM DISORDER

By

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A dissertation submitted to Johns Hopkins University in conformity with the requirements for the degree of Doctor of Education

Baltimore, Maryland

November 2020

Abstract

Autism Spectrum disorder (ASD) is a medical condition that is inconsistently diagnosed. Ethnic minorities, Hispanics in particular, are less likely to be diagnosed than their non-minority peers and the lack of a diagnosis impacts access to effective treatments. An ASD diagnosis can be overwhelming for families, affecting marital and sibling relationships, parent stress levels, social interaction with others, and presenting a significant financial burden. Hispanic families may not seek treatment for their child due to the absence of a diagnosis, inadequate or no health coverage, scarcity of providers, cost of services, and language or cultural barriers to access care. Applied behavior analysis (ABA) is the preferred approach to treatment for ASD and research has linked active parental involvement to positive outcomes for their children. An intervention consisting of an online parent training in Spanish to support Hispanic parents of children with ASD was presented. The online parent training examined the acquisition of parental knowledge in behavioral principles and strategies and measured its impact on parent stress levels. The research design followed a mixed methods approach to collecting and analyzing data. Findings reported no difficulty accessing content and the majority of parents expressed satisfaction with the parent training. Although all post-knowledge and posttest surveys showed an increase in parent's understanding of ABA principles and behavior strategies, parent stress levels were not reduced.

Keywords: autism spectrum disorder, ASD, Hispanics, online parent training, applied behavior analysis, ABA, parental stress

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Date of Exam: 10/20/2020

Location: Online

Dissertation Title: **Evaluation of an Online Parent Training in Spanish to Reduce Stress Levels in Hispanic Parents of Children with Autism Spectrum Disorder**

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Dedication

This dissertation is dedicated to my family:

To my son, Sam, who started me on this journey and inspires me every day to work hard and try my best,

To my husband, Samuel, for his love, support and steadfast belief in me, and

To my sons David, Matthew, and Lucas for their love, patience, and willingness to eat hot dogs and macaroni and cheese for dinner more nights than I can count..

Acknowledgements

I am very grateful for the support and contributions of my committee. I would like to express my sincerest gratitude to my advisor, Dr. Tamara Marder, for her extensive feedback, tireless enthusiasm for my study, and encouragement every step of the way. A special thanks to Dr. E. Juliana Paré-Blagoev for interviewing me and taking a chance on accepting me into the doctorate program. I feel truly privileged to have been her student and am grateful for her expertise and advice as a member of my committee. A final thanks to Dr. Christine Accardo for her willingness to be part of my committee and lend her expertise in the field of ABA to improve my project.

Finally, this research study could not have been completed without the families whose lives are affected by ASD and who were willing to participate in this project. I am thankful for their willingness to share their experiences and perspectives.

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Executive Summary

Problem of Practice

Centers for Disease Control and Prevention (2017) reports that the global incidence rates of autism are 1 or 2 out of 100, affecting all children regardless of race, ethnicity, or socioeconomic background. However, ethnic minority children are less likely to be diagnosed with autism than their non-minority peers (Mandell et al., 2002; Ratto, et al., 2016; Zuckerman et al., 2013; Zuckerman et al., 2014). This under-diagnosis is particularly true of Hispanics (Liptak et al., 2008). As a result, there is limited access to effective treatments among Hispanics (Willis et al., 2016). Multiple factors influence the probability and timeliness of an ASD diagnosis for a Hispanic child, as well as the likelihood of pursuing treatment. Some of these factors include: (a) the role of health care providers in the diagnostic process (Bordini et al., 2015; Magaña et al., 2015; Miller et al., 2011; Zuckerman et al., 2013), (b) the role of cultural influences which affect parental perceptions and expectations (Glazzard & Overall, 2012; Lawton, Gerdes, Haack, & Schneider, 2014; Zuckerman et al. 2014), (c) the limited family and social supports available to assist coping and dissemination of autism information and reduce stigma (Boujut, Dean, Grouselle, & Cappe, 2016; Grinker et al., 2015; Tonnsen & Hahn, 2016) and (d) the economic strain placed on families with autism (Lavelle et al., 2014; Leigh & Du, 2015; Sharpe & Baker, 2007). All these factors contribute to the reduced probability that Hispanic families pursue an initial diagnosis as well as seek out the necessary services needed to support a child with ASD.

Factors

Several factors could potentially contribute to the disparity in diagnosis between Hispanics and Whites. By applying Bronfenbrenner's ecological systems theory (1994) as a theoretical framework, the different factors were examined by their level of immediacy and

direct impact on the child with ASD. Some factors were the evolving definition of ASD by medical practitioners, language and cultural differences between families and providers, the family's educational levels and access to health care and insurance, and family characteristics such as their religion, role of family members within the home, and parental behavioral expectations of their children. Although there are a myriad of factors that may present possible barriers to the diagnosis and treatment of ASD for Hispanics, a needs assessment was conducted that focused on the interactions that take place between parent and child and the possible influences of the Hispanic culture on the home environment.

Theoretical Framework

The problem of practice was examined through the theoretical framework of ecological systems theory as outlined by Bronfenbrenner (1994). In his presentation of this theory, Bronfenbrenner proposes that human development is a continual evolution that is influenced by the immediate environment over time and consistent exposure (Bronfenbrenner, 1994). A nested ecological systems theory applies Bronfenbrenner's traditional approach of studying the influences of the different environments on the individual located at the center of the model (See Figure 1). The ecological system theory provides a strong framework for this synthesis given the number of people, institutions, and additional variables that interact with and influence a child with ASD. Bronfenbrenner's (1994) model identified several systems by which the individual is affected. The five major systems are the microsystem, the mesosystem, the exosystem, the macrosystem, and the chronosystem. The child with ASD is nestled solidly in the center of the structure, maintaining primary and consistent contact with the nearest system yet still influenced in varying degrees by the more external systems.

Needs Assessment

The purpose of the needs assessment was to explore families' experiences regarding the diagnostic process and treatments for their children. Families who were registered with the University of Miami Center for Autism and Related Disabilities received an email newsletter with an invitation to respond to a survey. Only forty-seven participants responded, the majority of which were Hispanic mothers. Most of the participants noted concern with their child's development and, over half, thought the diagnostic process took too long. Almost all the participants had health insurance and, more than half had specific ASD benefits. Parents selected speech therapy, occupational therapy, and applied behavior analysis as the therapies of choice for their child. The 98% response rate of parents wishing to become more involved in their child's therapy led to a closer look at parent training to ensure that parents became more active participants in their child's treatment.

Research Purpose and Objective

The purpose of the selected intervention was to evaluate the effectiveness of an online delivery method for training Hispanic parents of children with ASD, using both quantitative and qualitative data, to improve parental knowledge of ABA to address challenging behaviors and thereby decrease parental stress. The rationale behind this intervention was to address the gap in access to behavioral services for Hispanic children with ASD. This intervention provided access to effective strategies, encouraged parental involvement in those strategies, reduced the financial impact on families associated with treatment, and eliminated or reduced barriers to reducing treatment such as the under-diagnosis of ASD, scarcity of providers, financial impact, and language and cultural adaptations. The literature review identified applied behavior analysis as an evidence-based treatment that results in positive outcomes for children with ASD

(MacDonald et al., 2014; Makrygianni, Gena, Katoudi, & Galanis, 2018; McPhilemy & Dillenburger, 2013; Rivard et al., 2014;). Additionally, parent involvement is closely linked to their children's improved communication and socialization and reduced problem behaviors (Boettcher Minjarez et al., 2012; Tommeras, Kjobli, & Forgatch, 2018). Technological advancements that permit online delivery of instruction to parents can address barriers to services such as scarcity of providers, geographical limitations, and lack of access due to financial constraints. A training program that empowers parents to apply behavioral strategies with their own children will bypass the need for a diagnosis and insurance benefits needed to access behavioral services.

This research included two outcome evaluation and two process evaluation research questions:

RQ1: To what extent were participants able to access the content on the hosting site each week?

RQ2: What were parent perceptions regarding satisfaction with the parent training?

RQ3: To what extent does an online parent training intervention increase parents' knowledge of ABA principles and strategies?

RQ4: To what extent does an online parent training intervention have an impact on parents' stress levels?

Research Design

Guided by the research questions, a mixed-methods convergent parallel design was used to evaluate the effectiveness of the online parent training program in reducing Hispanic parents' stress levels (Creswell & Plano Clark, 2018). Pre and post-intervention quantitative and qualitative data were collected concurrently but analyzed separately. Quantitative data were analyzed using both descriptive and statistical methods, such as a dependent t-test to compare pre

and post-intervention results. Thematic analysis was used to analyze the qualitative data. The qualitative data were coded, organized into themes, and transformed into quantitative data, thereby allowing for data integration and comparison.

Intervention

Hispanic parents of children with Autism spectrum disorder (ASD) were recruited to participate in a six-week online parent training in Spanish through a flyer placed in the University of Miami's Center for Disabilities and Related Disorders. The six-week training consisted of a curriculum that was designed by the researcher that focused on teaching applied behavior analysis principles and strategies. The content of the curriculum included: 1) identifying behavior and antecedents; 2) describing the four functions of behavior; 3) understanding positive reinforcement and how to apply it appropriately; 4) distinguishing between different levels of prompts and how to use and fade them away; 5) identifying several prevention strategies; and, 6) reviewing concerns with toilet training, selective eating, and sleep disturbances. Each of the weekly trainings consisted of three short videos, ranging from five to eight minutes in length, that included vignettes of children engaging in problematic behavior and examples of how parents could apply behavioral strategies to reduce these behaviors. Each of the weekly trainings took about 30 minutes to complete, including the pre and posttest surveys.

Data and Data Analysis

Descriptive methods such as means and mode were used to analyze attendance records and the quantitative responses on the surveys regarding ease of access to content and levels of parental satisfaction with the training program. Demographic data was also analyzed using descriptive methods to measure specifics about participants, such as their age, gender, and annual income. For the comparison of pre-intervention and post-intervention results, a dependent t-test

was performed. Qualitative data were open-ended survey responses and interview responses from the Semi-structured interview that was conducted over the telephone at the conclusion of the training. A priori and in vivo codes were used to analyze the qualitative data. Once the thematic analysis was concluded, data was entered into NVIVO for further coding analysis

Findings

This study evaluated the effectiveness of an online delivery method for training Hispanic parents of children with ASD to improve parental knowledge of ABA and address challenging behaviors and thereby decrease parental stress. Two of the research questions were process questions focused on the implementation of the parent training. One question measured access and the other parent satisfaction. The parent participants had no difficulties accessing the hosting platform or the presentations. The unanimous positive responses eliminated restricted access or connectivity as factors impacting scores on the parent knowledge test, pre and posttest surveys, and parent stress instruments. Responses regarding parent satisfaction with the parent training were mostly positive, with only one respondent appearing dissatisfied. The results indicated that offering a parent training in an online delivery method was feasible and was well received by parent participants.

Two evaluation questions measured outcomes as result of the online training: parent knowledge before and after parent training and parent stress before and after parent training. The findings suggest that knowledge of ASD and ABA was gained from the online parent training program. There was a 28% increase in the mean score (83% correct) from the pre-knowledge test scores before starting the training to the post-knowledge test at the completion of the training. The posttests, following each individual module also resulted an increase from pretests across all of the modules by an average of 25% (range 12% to 37%). In summary, this six-week

parent training supported the effectiveness of an online delivery method for teaching Hispanic parents of children with ASD about ABA principles and strategies. For the second outcome measure, the findings suggest that stress levels post-intervention, measured by the ASPSI, did not reflect lower parent stress levels compared to before the training. This hypothesis posed by this study was that the implementation of an online parent training in Spanish for Hispanic families of children with ASD would reduce parent stress levels and increase knowledge of strategies to manage challenging behaviors. The results appear to support an increase in parent knowledge while not supporting a decrease in parent stress levels. Participant attrition, the time spent completing the parent training, and the global pandemic are potential factors that may have influenced the results of parent training. The current study's limitations included a smaller than expected sample size, the participants completing the training in less than the allotted six-weeks, and the inability to measure the impact of the pandemic on stress levels. The need for practitioners to stress parent involvement and offer emotional, as well as long-term, support for the whole family's well-being are just a few future implications for practice. Future research could compare asynchronous parent training with a training including some synchronous elements.

Chapter 1: Introduction to the Problem of Practice

Chapter Overview

Autism spectrum disorder (ASD) affects 1% of the global population (Matson & Konst, 2014) and results in impaired communication and socialization skills in those diagnosed although boys appear to be impacted more frequently than girls. The following chapter will examine the factors related to the challenges in diagnosing Hispanic children on the spectrum and the potential causes why the families may not seek services even after receiving a diagnosis. This chapter begins with a brief overview and description of ASD and presents the issues related to the Hispanic population. Next, the problem of practice is introduced. A theoretical framework will then be explored to understand the factors that contribute to the under diagnosis of ASD of Hispanic children and the low numbers of Hispanic families seeking treatment for ASD. Finally, a thorough literature review is presented examining the factors that contribute to the disparity in Hispanic ASD diagnosis and services through the ecological systems theory.

The Diagnosis and Treatment of Hispanics with Autism Spectrum Disorder

Autism, referred to as autism spectrum disorder (ASD) since the publication of the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) in 2013, is a disorder with no biological markers. Symptoms and signs include difficulties with socialization, language and communication impairment, and stereotypical or repetitive behaviors (Centers for Disease Control and Prevention, 2016). Symptoms typically develop at an early age and individuals with ASD demonstrate abilities that range from gifted to severely challenged (Centers for Disease Control and Prevention, 2016). Regardless of the child's ability level, a diagnosis of ASD presents many challenges from learning at school, to making friends, to communicating with others. While raising children involves many new skills for families to

learn, parenting a child with ASD presents a whole set of challenges for which most parents are typically unprepared to address. These challenges often time result in parenting stress, "…a specific type of stress that arises when the parents' perceptions of the demands of their role as parents surpass their resources to cope with them" (Miranda, Tarraga, Fernandez, Colomer, & Pastor, 2015, p. 82). For example, many children with ASD tend to have disrupted sleeping patterns which can have physical as well as emotional consequences on the parents (Glazzard & Overall, 2012). Additionally, children with ASD require increased parent attention and may limit their parents' ability to access activities outside the responsibilities of the home. This limitation leads to isolation for both parents and child to avoid uncomfortable or new situations which cause increased stress and "need for use of time-consuming coping strategies, and perhaps increases a feeling of ineptitude" (Glazzard & Overall, 2012, p. 39). Additional challenges parents experience that are directly tied to specifically addressing their child's immediate needs include, lack of support services, difficulty receiving a diagnosis, confusion over what the diagnosis means, and a lack of clear direction over where to seek help and how to cope present day to day challenges that exacerbate an already difficult situation. Although these are few of the examples families experience, it is important to note that the more severe the ASD symptoms are, the more significant the family is impacted by stress and anxiety (Glazzard & Overall, 2012).

Although ASD is a medical condition listed within the DSM-5, it is inconsistently diagnosed. For example, children from ethnic minorities are less likely to be diagnosed with ASD than their non-minority peers (Mandell, Listerud, Levy, & Pinto-Martin, 2002; Ratto, Reznick, & Turner-Brown, 2016; Zuckerman et al., 2013; Zuckerman et al., 2014). A specific ethnic minority that experiences an inconsistency of diagnosis is the Hispanic population. The

United States Census Bureau (2016) defines Hispanics or Latinos as those people who indicate their origins are from Spanish speaking countries regardless of race. The term Hispanics is used throughout this paper unless the often synonymously used term Latino is mentioned in a specific study. Hispanics are the fastest growing and largest ethnic group in the United States (Larkey, Hecht, Miller, & Alatorre, 2001; Magaña, Lopez, Aguinaga, & Morton, 2013). Although the Hispanic population is growing, and ASD incidence rates are rising, there remains a disparity in diagnoses between Hispanics and White non-Hispanics (Liptak et al., 2008; Magaña et al., 2013; Magaña, Parish, & Son, 2015; Zuckerman et al., 2013; Zuckerman et al., 2014). Related to the under diagnosis of ASD, is the limited access to effective treatments among Hispanics (Willis et al., 2016) which has long term consequences as access to early intervention has been associated with positive outcomes for the child with ASD (Bordini et al., 2015; Irvin, McBee, Boyd, Hume, & Odom, 2012; Kogan et al., 2008; Liptak et al., 2008).

Problem of Practice

Centers for Disease Control and Prevention (2017) reports that the global incidence rates of autism are 1 or 2 out of 100, affecting all children regardless of race, ethnicity, or socioeconomic background. However, ethnic minority children are less likely to be diagnosed with autism than their non-minority peers (Mandell et al., 2002; Ratto, et al., 2016; Zuckerman et al., 2013; Zuckerman et al., 2014). This under-diagnosis is particularly true of Hispanics (Liptak et al., 2008). As a result, there is limited access to effective treatments among Hispanics (Willis et al., 2016). Multiple factors influence the probability and timeliness of an ASD diagnosis for a Hispanic child, as well as the likelihood of pursuing treatment. Some of these factors include: (a) the role of health care providers in the diagnostic process (Bordini et al., 2015; Magaña et al., 2015; Miller et al., 2011; Zuckerman et al., 2013), (b) the role of cultural influences which affect

parental perceptions and expectations (Glazzard & Overall, 2012; Lawton, Gerdes, Haack, & Schneider, 2014; Zuckerman et al. 2014), (c) the limited family and social supports available to assist coping and dissemination of autism information and reduce stigma (Boujut, Dean, Grouselle, & Cappe, 2016; Grinker et al., 2015; Tonnsen & Hahn, 2016) and (d) the economic strain placed on families with autism (Lavelle et al., 2014; Leigh & Du, 2015; Sharpe & Baker, 2007). All these factors contribute to the reduced probability that Hispanic families will pursue an initial diagnosis as well as seek out the necessary services needed to support a child with ASD.

Theoretical Framework

The problem of practice will be examined through the theoretical framework of ecological systems theory as outlined by Bronfenbrenner (1994). In his presentation of this theory, Bronfenbrenner proposes that human development is a continual evolution that is influenced by the immediate environment over time and consistent exposure (Bronfenbrenner, 1994). A nested ecological systems theory applies Bronfenbrenner's traditional approach of studying the influences of the different environments on the individual located at the center of the model (See Figure 1). The ecological system theory provides a strong framework for this synthesis given the number of people, institutions, and additional variables that interact with and influence a child with ASD. Bronfenbrenner's (1994) model identifies several systems by which the individual is affected. The five major systems are the microsystem, the mesosystem, the exosystem, the macrosystem, and the chronosystem. The child with ASD is nestled solidly in the center of the structure, maintaining primary and consistent contact with the nearest system yet still influenced in varying degrees by the more external systems (See Figure 1).

Microsystems represent a child's immediate environment, and interactions take place in a

"face to face setting" (Bronfenbrenner, 1994, p. 1645). This system has the most direct impact on the children with ASD and can include the parents, siblings, teacher, therapists, and peers. The critical interaction between caregiver and child, often the mother-child dyad, is at the heart of this innermost system. The mesosystem is the system in which the different microsystems interact with the individuals still playing an active role, such as the relationships between the individuals and their teachers or health care providers (Bronfenbrenner, 1994). The exosystem represents the settings which may indirectly influence the children such as neighbors, family friends, the social community, the parents' employment, and the family's socioeconomic status. The family finances affect access to health care and may be the source of an economic burden to the child's family which impacts the quality of the child's services and treatment, the stability of the family's finances, and causes stress to the household's personal dynamics. The macrosystem "may be thought of as a societal blueprint for a particular culture" (Bronfenbrenner, 1994, p. 1646). This system encompasses beliefs and value systems that may guide the individuals and their environment's interactions. Cultural values, sensitivity to these beliefs or lack thereof, and language barriers are located in the macrosystem and may indirectly influence the relationships between the children with autism and their parents, their health care providers, their teachers, and the community. Bronfenbrenner's (1994) fifth and final system is the chronosystem which is defined as a change in the environment that takes place over time. The evolving definition of ASD is a prime example of a characteristic of the environment, and not a personal attribute of the individual, that can change over time and have an impact on the child with ASD. The interactions and relationships between the individuals within each of these five systems, whether direct or indirect, play a major role in the individual's development and shape human learning.

Figure 1. Bronfenbrenner's (1994) Nested Ecological Systems Theoretical Framework.

Literature Review

The literature review will focus on the various systems within the ecological framework that influence the children with ASD and their probabilities of receiving a diagnosis and treatment. The systems will be reviewed from the outer layer moving in towards the inner layer with the child located at the center of the system. The chronosystem is the outermost layer, followed by the macrosystem, then the exosystem, the mesosytem, and, finally, the microsystem.

The microsystem consists of the parents, the home environment, and the children with ASD. Interactions with teachers at school and health care providers in a clinical setting also belong to the microsystem as they may affect if and when these children are diagnosed with ASD and when they receive appropriate treatment (Bordini et al., 2015; Boujut et al., 2016). The microsystem is also exposed to influences from the outer layers of the ecological system including the chronosystem, the macrosystem, the exosystem, and the mesosytem. For example, the community as a whole, Hispanic cultural values and beliefs, the families' socioeconomic status, access to health care, and the training of teachers and medical providers are factors within the outer lying systems that may also impact the likelihood of a diagnosis and following treatments (Lawton et al., 2014; McGonigle et al., 2014; Thomas et al., 2012). Thus, they must be identified and defined within the synthesis to properly explore the direct or indirect impact they have on the children with ASD. The next section reviews each of the variables in the different systems and how they influence the microsystem.

Chronosystem

The chronosystem includes environmental and sociohistorical events that take place chronologically, over the course of the child's life (Bronfenbrenner, 1994). Although the long-term impact of the changing interpretation of ASD may not be clarified until further research is completed, the evolution of ASD and its definition may be considered a sociohistorical event with far reaching implications. As such, the dynamic criteria of the ASD definition may be represented in the chronosystem of the ecological system theory. The impact of ASD on a child and family can be observed as occurring within this outer layer, with an event such as the modification of the definition influences all stakeholders and settings within the nested model of the ecological system (See Figure 1).

Changing criteria of ASD definition. The publication of Leo Kanner's report in 1943 was the catalyst for future autism investigation and categorized autism as a separate medical disorder (Volkmar & Partland, 2014). However, in recent years, changes in the scope of the symptoms have reflected a broadening of the definition although at the same time creating more objective criteria for diagnosis as noted in the DSM-IV published in 2000 and the DSM 5 published in 2013. The DSM-IV criterion for an autism diagnosis requires impairment in both communication and socialization skills, as well as a consistent display of repetitive or stereotypical movements before the age of three and separately diagnoses Asperger's and Pervasive Developmental Disorder Not otherwise specified (PDD-NOS). The DSM-5 combined these three disorders under the umbrella of ASD. With this increasingly broad definition, the DSM-5 was identified as a relevant contributing factor to the growing global ASD prevalence rates in the last decade (Smith, Reichow, & Volkmar, 2015).

Numerous resources cite rising incidence rates for ASD both in the United States and globally in recent years (Goin-Kochel, Mackintosh, & Myers, 2006; Maenner et al., 2014; Schieve et al., 2012). However, other sources present an opposing view by claiming that the implementation of the DSM-5 criteria has led to a decrease in ASD diagnoses since the definition has become more stringent (Maenner et al., 2014; Smith et al., 2015). The learning curve for doctors to familiarize themselves with the new criterion could account for the 18% decrease in diagnoses found in one particular study (Maenner et al., 2014). Another supporting study declares that with the new changes in classification, fewer patients are diagnosed with ASD because the higher functioning children no longer fall within the standard range of symptoms (Smith et al., 2015).

Macrosystem

The next layer of the ecological systems theory is the macrosystem, defined as the "societal blueprint for a particular culture" in which individuals live (Bronfenbrenner, 1994, p. 1645). Examples of the impact on a child with ASD at this level include culture and language. The cultural differences between health care providers and the families of the children with ASD provide potential barriers for a delay or lack of diagnosis and follow up treatment. The cultural sensitivity to the values and beliefs of Hispanics are present in the macrosystem of the ecological systems framework, one of the outermost levels (See Figure 1). Although these beliefs are located at a level that does not supply immediate contact with either the children with ASD or the health care providers, it may impact interactions within other structures of the system. Therefore, if health care providers hold different cultural views regarding acceptable behavior than do Hispanic parents, this could negatively impact the probability of the children to receive an accurate diagnosis.

Language barriers and cultural sensitivity. Language barriers and cultural sensitivity are variables that are also included in the macrosystem. For example, families who do not seek professional help or who have difficulties communicating due to language barriers do not receive a diagnosis or recommendations for interventions which impact the child's prognosis (Begeer, El Bouk, Boussaid, Meerum Terwogt, & Koot, 2009). With the Hispanic population growing faster than any other people in the United States (Magaña et al., 2013) and the growing incidence of ASD (Centers for Disease Control and Prevention, 2017), health care providers must adapt their approach to be more aware of the diagnosis signs and symptoms as well as to be culturally sensitive to Hispanic families beliefs and values. Communication problems, a component of the definition of ASD, could be misconstrued as a second language issue and socialization issues, a

second element of the ASD criterion, could also be confused with difficulties in adaptation to the new culture (Begeer et al., 2009).

In a 2004 study, 25% of Latinos reported language as the primary barrier to accessing health care services (Yu, Nyman, Kogan, Huang, & Schwalberg, 2004). Almost a decade later, 267 providers in California, where Latinos are now a majority population (Zuckerman et al., 2013), only 10% of providers offered screenings and testing in Spanish (Zuckerman et al., 2013). Furthermore, 75% of the participants in this study noted barriers to an ASD diagnosis were difficulties of communicating with the provider in Spanish and access to an ASD specialist (Zuckerman, et al., 2013).

A principal factor for the disparity in diagnosing Hispanics is the inconsistency in doctors' diagnoses (Magaña et al., 2015). In a study measuring provider interaction, such as listening to the parent, spending enough time with the child, and showing sensitivity to the families' culture, findings suggested that Latino parents were less likely to identify positive interactions with their providers than were White non-Latinos (Magaña et al., 2015). Results remained unchanged over a period of five years, thus affirming a continued ethnic and racial disparity in providers' treatment of minorities with ASD (Magaña et al., 2015). Perhaps the disparity in ASD diagnosis rates could be attributed to the subjectivity, or bias, in the providers' perceptions of children from minority groups (Magaña et al., 2015) as parents felt that providers dismissed their concerns (Goin-Kochel et al., 2006).

Cultural Influences on the Family and Home Environment. ASD is diagnosed through social and behavioral symptoms which rely on subjective reports of symptoms and can be influenced by cultural sensitivity or lack thereof (Lobar, 2014). Cultural values and beliefs may influence how the parents and other family members interpret the child with ASD's

symptoms and if and when any action is taken in seeking the advice or diagnosis from a health care professional and subsequent treatment (Zea, Quezada, & Belgrave, 1994). Cultural views such as religious beliefs and a moral code, emphasizing respect and the closeness of family, affect the day to day interactions between the children with ASD and their immediate family. The influence of the parents and family environment will be discussed in more detail in the microsystem section.

Exosystem

Within the framework of the ecological systems theory, the community belongs in the exosystem. The exosystem is nestled between the macrosystem and mesosystem and is defined as the link between two or more settings in which events indirectly affect the child in the microsystem (Bronfenbrenner, 1994). An example of a variable from this system is the atypical behaviors that many children with ASD display. When atypical behaviors take place in a public setting, it may cause embarrassment to the parents. In addition, the onset of maladaptive behaviors typical of ASD is the catalyst to the stigma which not only affects the children with ASD who is shunned and excluded from activities and services but their families who are affected by association (Kinnear, Link, Ballan, & Fischbach, 2016). Several factors lead to the label of stigma in addition to the actual behaviors such as rejection of peers, isolation, and exclusion of family and friends, and impact on parents work life (Kinnear et al., 2016). The role of the community is critical in providing emotional support to families as well as teaching and practicing tolerance and acceptance. Lower ASD rates are documented among ethnic and racial minorities as well as socially disadvantaged children (Kogan et al. 2008).

Healthcare and diagnostic screenings are expensive, but the long-term cost of not offering diagnoses and treatments promptly is even more so (Miller et al., 2011). Aside from the expenses

of medical visits, prescriptions, and treatments, are the costs of lost wages, caregiver expenses, and psychological and social consequences that can also have an economic impact (Sharpe & Baker, 2007). Even transportation services to take the child to the doctor and additional service provider visits could incur expenses that families are unable to meet (Zuckerman et al., 2014). The factors that impact financial costs such as socioeconomic status (SES) and health insurance are also situated within the exosystem of the ecological systems framework. The variables described in the exosystem can indirectly affect the children at the center of the ecological system (See Figure 1). The parents' workplace or health care policy are some examples of events in the exosystem that may indirectly impact the probability of an ASD diagnosis and treatment.

Community Support. Community support provides vital support to individuals with special needs, and their families, to help them achieve independence and reduce effects of stress. Misconceptions regarding the cause of ASD and how to treat it abound and mostly center on poor parenting and lack of discipline (Glazzard & Overall, 2012; Grinker et al., 2015). Physical symptoms do not typically accompany an ASD diagnosis. Rather, the primary manifestations are impaired communication skills and disruptive behaviors which call attention to the child and family and make parents feel defensive of their parenting skills (Hall, 2012). The severity of the children's symptoms can affect parents' stress levels, especially if the children exhibit aggressive and self-injurious behaviors. Although there are medical and diagnostic materials available, they are primarily for professional use (Grinker et al., 2015). Few materials are translated and geared at parents and families to educate them about their child's condition, available treatments, and support services (Grinker et al., 2015). Not only are materials and programs for training schools and community activities about ASD scarce, but they are also lacking for medical staff in hospitals teaching them how to interact and treat patients on the spectrum (McGonigle et al.,

2014). With few resources available to educate families and the community, White non-Hispanic families tend to report feeling less community support than other races and ethnicities (Hall, 2012).

Families of children with ASD feel the lack of community support in the schools as well. Although a growing number of children with ASD are included in mainstream classrooms to promote opportunities for social interaction, findings suggest that these inclusion practices are not resulting in the desired acceptance of the children with disabilities (Tonnsen & Hahn, 2016). "Stigmatized attitude and behaviors" continue to exist among children with disabilities and their typical peers (Tonnsen & Hahn, 2016, p. 263). The attitudes of the typically developing peers are shaped by their gender and their previous experience or exposure to disabilities (Tonnsen & Hahn, 2016). "The physical integration of students with disabilities may not be sufficient to facilitate positive social experiences" (Tonnsen & Hahn, 2016, p. 271). Rather, social integration, a genuine acceptance by their peers, is the desired outcome. The successful inclusion of children with ASD not only depends on the abilities and behaviors of the children with the disability but also of the willingness and attitudes of their peers.

Children with ASD should have the same opportunities to access and participate in community activities as their typical peers. However, a child with ASD may have difficulty communicating and socializing which can lead to social isolation and exclusion from activities (McConkey, Mullan, & Addis, 2012). The majority of the participants in one particular study welcomed the opportunity to include students with disabilities although some activity leaders exhibited reluctance linked to the concern that the child with ASD would require more supports and the reaction of other participants (McConkey et al., 2012).

Socioeconomic status. Socioeconomic status, defined as a combination of education, income and occupation, can have an impact on the microsystem. Poverty, low levels of education, and limited access to health care influence the under diagnosis and access to quality treatments for Hispanic families (Begeer, et al., 2009; Cohen, 2013; Mandell & Novak, 2005). Poverty is the main barrier to access an ASD diagnosis and even after the diagnostic process had been completed (Zuckerman et al., 2014). A 2008 study supported the findings that the disparity in diagnosis for Latinos is closely linked to income level (Liptak et al., 2008). However, the authors do suggest that results could be skewed given that a majority of the participants fell into the lower income bracket (Liptak et al., 2008). The delay between the parents' initial concern with their children's development and the following diagnosis is also attributed to low socioeconomic status. Parents with lower incomes demonstrate less knowledge of ASD even after controlling for education (Ratto et al., 2016). The delay in diagnosis may be attributed to the difficulty in navigating the health care system, obtaining a diagnosis, and access in general to medical care.

Additional supporting evidence of the positive correlation between incidence rates and SES can be found in an investigation on high ASD incidences in New Jersey, one of the wealthiest states in the country (Thomas et al., 2012). Significant findings demonstrated children from higher income families had more evaluations, were diagnosed at an earlier age and had a higher prevalence of ASD (Thomas et al., 2012). However, similar studies conducted in Europe do not demonstrate a relationship between ASD and socioeconomic status (Thomas et al., 2012). This lack of correspondence could be explained due to equal access to health care regardless of income level. Once income levels were accounted for in the study, there was no association between race and ethnicity, thereby suggesting that ASD is not partial to race or income level,

but to external variables which affect the timing of the diagnosis and access to services after that.

Parental education levels are another determining factor that correlates with lower ASD prevalence rates (Kogan et al. 2008). “That parent education and income were associated with earlier diagnoses and subsequent higher satisfaction with the diagnostic process is not necessarily surprising but is worthy of emphasis” (Goin-Kochel et al., 2006, p. 446). A study that compared diagnosis and treatments of Latinos with non-Latinos pointed to the disparity in diagnosis with Latinos significantly under diagnosed (Magaña et al., 2013). The authors noted that the non-Latino respondents were of higher SES, thereby implying that the more educated parents had more financial means thus permitting increased access to services and information (Magaña et al., 2013).

Health care expenses and insurance. Families with ASD spend more money on health care than families with other disabilities or health conditions (Parish, Thomas, Rose, Kilany, & McConville, 2012). Financial problems were more likely in families that did not receive reimbursement for medical interventions or educational expenditures and families earning under $40,000 per year were at greater risk of financial ruin due to ASD than those making $60,000 or more (Sharpe & Baker, 2007). The high costs associated with the care of children with ASD have led to state mandates on insurance (Parish et al., 2012). An examination of the extent of the economic impact on families suggests a significant correlation between states requiring insurance for ASD and the families’ financial burden (Parish et al., 2012).

Household income was not linked to in school services but was positively correlated to private services out of school (Irvin et al., 2012). The services measured in this particular study were limited to speech, occupational and applied behavior analysis and it is possible that some families are seeking other treatments which could affect the responses in services received (Irvin

et al., 2012). Applied behavior analysis is an evidence-based treatment, currently considered to be the best approach to improving symptoms of ASD. However, limited access to health insurance and effective treatment, have led families to seek out complementary and alternative medicine options (Levy, Mandell, Merhar, Ittenbach, & Pinto-Martin, 2003). The numbers of families participating in these non-evidence-based treatments may be underrepresented as caregivers may have been unwilling to truthfully share their experiences (Levy et al., 2003). However, findings suggest that Hispanic children are six times more likely to use non-traditional treatment than White non-Hispanics (Broder-Fingert, Shui, Pulcini, Kurowski, & Perrin, 2013; Mandell & Novak, 2005).

Efforts have been made to analyze the pediatric cost of ASD by determining annual health care and school expenses, ASD related and family coordinated services, and caregiver time (Lavelle et al., 2014). Findings concluded that the cost of a child with ASD is $17,000 a year per family, with more severe ASD resulting in higher costs (Lavelle et al., 2014). These results, considered with previous findings that suggest when Hispanics are diagnosed, the condition tends to be more severe, presents serious long-term financial implications with an approximate lifetime cost of $3.2 million per person with ASD (Lavelle et al., 2014). A study examining the possibility of systematic ASD screening during well child visits is the first known study to observe Hispanic families in the pediatric community (Miller et al., 2011). Findings reported that 78% of uninsured children did not show up for well child exams and 32% of all children would have been missed if screenings were only offered at well child visits (Miller et al., 2011).These results reinforce the importance of health insurance and the lack thereof as a barrier to a diagnosis. Although ASD treatment is expensive, access to early intervention is directly related to improve outcomes for the child and long-term savings and cost effectiveness

(Irvin et al., 2012).

The increased economic burden on families with ASD who fall into the lower income bracket can be examined further by exploring the correlation between insurance coverage and economic duress (Parish et al., 2012). Findings in one study reported that expenses for low income families were the same as those of high-income families when services were not covered by insurance (Parish, Thomas, Williams, & Crossman, 2015). However, higher income families with private insurance spent significantly more, almost double, than families with public insurance (Parish et al., 2015). In addition to higher expenses for medical treatments, parents of a child with ASD may have to reduce work hours or even quit a job to care for their child, producing additional economic stress on the family (Parish et al., 2015). Although this study did not explore causality, it is likely that lower income families have Medicaid which covers ASD services and has either little or no copayments (Parish et al., 2015).

Mesosystem

The next layer in the system, mesosystem is defined as the link between two or more settings which includes the child in the microsystem (Bronfenbrenner, 1994). In this layer, variables that directly impact the child with ASD include health care providers and teachers (See Figure 1). Families' first point of contact and support is the general practitioner or pediatrician making the role of health care providers critical in the proper and timely diagnosis of a child with ASD (Bordini et el., 2015). Teacher interactions with students with ASD also play an important role. The quality of this interaction may result in long term implications for the children nestled at the center of the mesosystem if the children are incorrectly diagnosed or diagnosed at a later date than their White non-Hispanic peers (Irvin et al., 2012; Kogan et al., 2008; Liptak et al., 2008).

Lack of training for providers and conflicting diagnoses. Rising prevalence rates of ASD present noteworthy implications for physicians (Kogan et al., 2008). As there are no biological tests for ASD, doctors base evaluations and diagnoses on direct observation and feedback from parents (Dosreis & Weiner, 2006; King & Glascoe, 2003; Sices, Feudtner, McLaughlin, Drotar, & Williams, 2004). An early diagnosis and subsequent intensive treatments are strongly correlated with positive outcomes for children on the spectrum (Bordini et al., 2015; Irvin, et al., 2012; Kogan et al., 2008; Liptak et al., 2008). Although a diagnosis for all children is critical, there appears to be some disparity in the diagnosis rates of Hispanic children compared to that of White non-Hispanic children (Chaidez, Hansen, & Hertz-Piccioto, 2012; Liptak et al., 2008; Magaña et al., 2015; Zuckerman et al., 2013). Hispanics are diagnosed approximately 2.5 years later (Zuckerman et al., 2014), if at all, thereby missing a window of opportunity for early intervention (Mandell et al., 2002; Ratto et al., 2016; Zuckerman et al., 2013).

Pediatricians and general practitioners who have the first contact with patients are not always properly trained to identify ASD (Bordini et al., 2015). Health care providers have not received specialized training and "feel unprepared to treat patients with developmental disabilities" (Magaña et al., 2015, p. 505). This lack of training affects not only the providers' diagnostic skills but also their ability to impart information to parents about the disorder, prognosis, and treatment options (Mandell & Novak, 2005). A study of fourth-year medical school students discovered that they responded correctly to approximately five out of 10 questions about autism (Shah, 2001). Results from a study conducted over a decade later showed that health care professionals still lacked specialized training as parents felt providers should be better trained in providing early ASD diagnoses and in language development for bilingual

children (Zuckerman et al., 2014).

Physicians tend to rely on "spontaneous clinical judgments" rather than developmental screening tools (Begeer et al., 2009, p. 143). These judgments could be due to time constraints during doctor visits and health insurance limitations (Goin-Kochel et al., 2006). Only 8% of pediatricians in the United States reported screening for ASD regularly, regardless of the ethnicity of the patient, during a case record investigation (Begeer et al., 2009). The low prevalence of screening rates could be due to unfamiliarity with the diagnostic tools as well as insufficient time during the visits to perform these in-depth assessments (Begeer et al., 2009). There seems to be a greater disparity in diagnosis if criteria are based on provider's clinical judgment rather than a standardized rating system (Begeer et al., 2009; Miller et al., 2011). The use of standardized diagnostic instruments would eliminate the potential for bias (Begeer et al., 2009; Goin-Kochel et al., 2006) thereby increasing the likelihood of an appropriate and timely ASD diagnosis.

Medical professionals tend to have more frequent contact with children with ASD as these patients use health services more frequently than children with other disabilities (Bordini et al., 2015). This could be attributed to the higher rates of multiple diagnoses or comorbidities with an ASD diagnosis, "including epilepsy, gastrointestinal problems, anxiety and depression, and respiratory, food, and skin allergies" (Kogan et al., 2008, p. 1150). Intellectual disability is determined as a common comorbidity in about half the cases of children with autism (Mandell et al., 2009). Behavior problems could be diagnosed with attention deficit hyperactivity disorder (ADHD), and repetitive behaviors may be misdiagnosed as obsessive-compulsive disorder or oppositional defiance disorder rather than as ASD (Mandell et al., 2009).

The younger the child, the more confusing it is to diagnose ASD, as the symptoms could

overlap with other neurodevelopmental disorders (Overton, Fielding, & Garcia de Alba, 2007). Children who are merely developing at a different pace could be labeled with an incorrect diagnosis (Goin-Kochel et al., 2006). Comorbidities could complicate the diagnosis of ASD (Overton, et al., 2007). In a study focusing exclusively on Hispanic children, findings reported ADHD, PDD-NOS, and communication disorders as the most commonly provided diagnoses for this population (Overton et al., 2007). This potential for diagnosing a coexisting disorder instead of ASD may be a contributing factor to why Hispanics have a lower diagnosis rate than White non-Hispanics.

Lack of teacher training. The limitations in training the community about ASD extend to the school system. With the rising incidence of ASD rates, so are the numbers of children with ASD in the education system. Thus, teacher training and the inclusion of students with ASD in the general education classroom have become of concern (Boujut et al., 2016; Chung et al., 2015; Shyman, 2012).

The Individuals with Disabilities Education Act (Individual with Disabilities Education Act, 2004) states that students with disabilities should be placed in the least restrictive environment. However, students with ASD typically present with behavior issues in addition to difficulties with socialization and communication that makes inclusion in a mainstream class a challenge and causes tension in the classroom (Chung et al., 2015; Emam & Farrell, 2009). Teachers are expected to be skilled at addressing a range of educational needs within the class, and there is no agreement on which approach or teaching methods are most effective (Reichow, Volkmar, & Ciccheti, 2008). Current training is reactive in how to handle a crisis, or degrees are offered in general education rather than focusing on certification in a specialized field (Scheurmann, Webber, Boutot, & Goodwin, 2003). Each student with ASD has unique skill sets

and needs thereby creating a challenge for teacher training. Not every approach works with every child making it difficult to create a single workshop or training program for teachers. Preservice training tends to focus on eligibility and legal issues and generic instructional methods and accommodations rather than on specific strategies to address the social, communication, and educational needs of the students with ASD (Morrier, Hess, & Heflin, 2011). Teachers reported workshops full and half day as the most common methods of training for working with ASD students and fewer than 20% learned strategies to use in the classroom in their university teacher preparatory program (Morrier et al., 2011). Also, the training provided through workshops are not always evidence based.

Positive outcomes for children with ASD can be linked to a positive teacher's attitude (Chung et al., 2015). Teachers in a regular classroom with students with ASD suffered from higher perceived stress and felt a notable lack of both professional and social support (Boujut et al., 2016). Teachers in special education classes felt lower stress levels and recognized support from their workplace (Chung et al., 2015). Teachers' attitudes toward students with ASD were more negative than if they had a general education background compared to those with a special education certification (Chung et al., 2015). Teachers with no experience or training working with special needs students had the most negative attitudes of all the teachers (Chung et al., 2015). Training teachers is a good first step, but if they become emotionally exhausted and have no support system, either professional or social, there is a high risk of burnout and job termination (Boujut et al., 2016).

Microsystem

The microsystem is the innermost layer of the nested ecological system model and the closest one to the child (Bronfenbrenner, 1994). Therefore, it is the place where the child has

face to face interactions with people in his immediate environment. It is in this setting that the child is most influenced by the mother and other immediate family members. For the child with ASD, positive parental interaction can result in significant improvements in their developmental abilities (Siller, Hutman, & Sigman, 2012) (See Figure 1).

Religion. Religious beliefs play an important role in many Hispanic families, especially if there are children with developmental disabilities. Religion serves primarily as a support and coping mechanism (Lawton et al., 2014; Salkas, Magaña, Marques, & Mirza, 2016; Skinner, Correa, Skinner, & Bailey, 2001) however, religion also plays a role in the interpretation, and understanding the purpose, of the disability within the families' lives (Skinner et al., 2001). Fatalism, or predeterminism, the acceptance that an individual's destiny is fixed, is a belief central to Hispanic families in which God is omnipotent, and individuals are not in control of their fate (Abraido-Lanza et al., 2013). As such, fatalism has a strong correlation to health seeking behavior which affects the diagnosis and treatment of Hispanic children with ASD (Abraido-Lanza et al., 2013; Larkey et al., 2001). Many families may believe that their children's disability is a message from God and choose not to seek services to improve their condition. This belief in fatalism hinders Hispanics from seeking preventative care or from following up with a doctor unless symptoms become severe (Larkey et al., 2001; Zea et al., 1994) because they believe that their fate is in God's hands and cannot be altered.

Studies conducted exclusively with Hispanic families examined the role of religion in how the parents viewed their children's disability. Although one study cited subjects who claimed having a child with ASD was "God's will" (Ijalba, 2016, p. 202), most families used religion as a coping mechanism and employed effective reframing techniques (Salkas et al., 2016). These parents viewed their children's disability in a constructive way by perceiving them

as an asset. Most respondents viewed children with ASD as a positive sign from God (Salkas et al., 2016; Skinner et al., 2001) stating that "God chose them" as parents for their children and that their children were a "gift from God" (Skinner et al., 2001). In one particular study, a single participant disagreed stating that a child with a disability could be regarded as a punishment from God (Salkas et al., 2016). Although the studies previously mentioned indicated that Hispanics are accepting of their fate, a contradictory study indicated that a belief in God might drive patients to seek medical care rather than resigning themselves into God's hands (Larkey et al., 2001).

Familism. Hispanics are defined as a family-oriented culture (Blanche, Diaz, Barretto, & Cermack, 2015). The concept of familism is a cornerstone of the Hispanic household and represents the strength of the extended family system (Hughes, Valle-Riestra, & Arguelles, 2008; Lawton et al., 2014). Family members lean on each other for support and as points of reference. If a child in the household is having behavioral problems, it is typically believed that it is a result of a conflict in the family dynamic (Lawton et al., 2014). Rather than search for physical or psychological factors, the family turns to upheaval in the household or stress as a possible explanation.

This reliance on family members may influence the way parents understand their children's behavior or health symptoms and the potential underlying causes (Lawton et al., 2014). One study uncovered that Latino family members' reactions to the voicing of concerns over ASD symptoms affected if and when the caregivers followed up on those concerns and subsequent utilization of recommended treatments (Blanche et al., 2015). These same family members were identified as a primary source of information and were initially resistant to accept an ASD diagnosis (Blanche et al., 2015). Cultural differences were offered as an excuse for the child's behavior including the second language, an inclination to blame doctors for over labeling,

or poor parenting for not adequately discipline and spoiling the child (Blanche et al., 2015).

The strength and bonding offered by familism can also have its disadvantages. Parents may feel isolated and stigmatized in their households as they are blamed for their child's misbehavior and what is perceived as a lack of parental discipline (Lawton et al., 2014). This sense of shame and self-blame may prevent them from seeking help for their children outside the family (Blanche et al., 2015). The families' reluctance to diagnose their children prevents the labeling of the child with a disability and allows both the child and the parents, to escape discrimination and a label. Mental health issues carry a stigma in Hispanic culture (Ijalba, 2016; Kinnear et al., 2016). Families may choose to deny there is a problem to save the family from the burden of a disability and from the shame and rejection they perceive would be associated with the diagnosis (Zuckerman et al., 2014). However, even though influence from family sources may delay the diagnosis and pursuit of treatment for the child with ASD, the sense of support provided by the family is linked to lower stress levels and increased self-efficacy of the primary caregiver (Cohen, Holloway, Dominguez-Pareto, & Kuppermann, 2014). In turn, when parents have a higher sense of self-efficacy, they feel more confident and more positive which may transfer into more effective parenting and advocate for their child (Cohen, 2013).

Parental awareness and behavioral expectations. The role of familism is closely tied to Hispanic parenting practices. The Hispanic parenting style is very protective and demonstrative and less focused on teaching independence (Cohen, 2013; Domenech Rodriguez, Donovick, & Crowley, 2009). Hispanic expectations of children's behavior, especially those of young male children, may differ from those of other ethnicities (Blanche et al., 2015; Lawton et al., 2014). The role of the Hispanic mother is seen as subordinate to the father and head of household which suggests a more passive and docile attitude is expected of girls than boys

(Schmitz & Velez, 2003). Common family reactions to initial behavioral concerns are that the child is spoiled, requires spanking or discipline, will grow out of it, or of complete denial (Blanche et al., 2015). Hispanics may have different and more tolerant behavioral expectations thereby permitting certain behaviors which are not identified as problematic until the child is older thus contributing to a late diagnosis when compared to White non-Hispanics (Blanche et al., 2015; Zuckerman et al., 2014). Recognizing that their children's behavior is inappropriate and interfering with everyday life skills is critical for the parents as it is the catalyst to the process of seeking medical care (Lawton et al., 2014).

In a study of attention deficit hyperactivity disorder, a condition that parallels the disruptive behaviors of ASD, ethnic minority parents were less likely to blame their children's behavioral issues on biological or medical reasons but instead on the children's distinct personality (Lawton et el., 2014). These etiological beliefs, as well as the traditional cultural views previously mentioned, influence the assessment and treatment of mental health care for Hispanic children (Lawton et al., 2014). These preconceptions could lead to seeking help only when the child's behavior is severe or when their child is older, and the misbehavior can no longer be attributed to childishness (Liptak et al., 2008).

Respect is another core value for Hispanic families. Children are expected to respect their elders and authority figures. The maladaptive behaviors of a child with autism could be misconstrued as disrespect towards others (Lawton et al., 2014; Schmitz & Velez, 2003). This misconception places a burden on the parents, who are seen as lacking in parental guidance and discipline (Lawton et al., 2014). Once again, the avoidance of diagnosing the behavioral problem as a medical condition makes it less likely the family will seek outside assistance and instead try to resolve the problem at home. The delay in pursuing professional help for the child also has an

adverse impact on effective treatment options as most prognoses are best with early intervention (Kogan et al., 2008; Liptak et al., 2008).

A correlation may be drawn between parenting practices and general lack of knowledge about ASD symptoms. The delay for Hispanics to receive a diagnosis and pursue treatment may be linked to their preconceptions about ASD and developmental milestones (Ijalba, 2016; Ratto et al., 2016). Hispanic mothers had a broader time frame for development of independent and social skills than White non-Hispanic mothers (Ratto et al., 2016). They predominantly thought that ASD was a temporary condition and that children could learn to speak as late as five years of age and catch up with their peers (Ijalba, 2016). When compared to White non-Hispanic mothers, Hispanic mothers demonstrated a notable difference in the timing and development of certain milestones, especially in adaptive skills (Ratto et al., 2016). Increased awareness of development and ASD was linked to less time elapsed between initial concern and a formal diagnosis (Ratto et al., 2016). Interestingly, Hispanic mothers tended to develop initial concerns regarding their children's development at the same time as White non-Hispanic mothers thereby suggesting that a lack of awareness may not be the true driver of a delayed diagnosis (Ratto et al., 2016).

Summary

At each level of the ecological systems theory, there are different variables that affect the child in the microsystem. Culture influences a family's roles, values, and belief systems which in turn impacts how the family reacts when presented with the likelihood of a child with ASD. Examining factors that affect a diagnosis and treatment from the perspective of culture on the home environment provides insight into deep-rooted family values like respect, leaning on extended family for emotional support, and religion, which are all hallmarks of Hispanic culture.

Awareness of developmental milestones differs for Hispanic mothers compared to those of white non-Hispanics, as do behavioral expectations for Hispanic boys compared to Hispanic girls. Although these values and beliefs demonstrate the fortitude and unity of the household, they also prevent the families from seeking help from outside resources such as doctors, teachers, and therapists. Although there are a myriad of factors that may present possible barriers to the diagnosis and treatment of ASD for Hispanics, the needs assessment will focus on the parent-child dyad and the influences of the Hispanic culture on the home environment: parental awareness of ASD, knowledge and access to effective treatments, parental involvement, and how to increase parental self-efficacy.

Chapter 2: Needs Assessment

Chapter Overview

Chapter 1 presented literature that demonstrates the wide range of factors that can influence an ASD diagnosis for a Hispanic child and the family's consequent pursuit of treatment. This next chapter describes a needs assessment used to evaluate the problem of practice. First, the context for the needs assessment is presented followed by the presentation of the research questions to be addressed. Next, the rationale for a needs assessment is presented followed by the methodology which includes a description of the participants, measures, and the data collection methods. This is followed by the results and discussion section classifying the findings into four distinct categories; diagnosis, therapies used, parental awareness, and parental involvement. In the final section of the chapter, a summary outlining the limitations of the needs assessment as well as the implications for future research are presented.

Context of the Study

Centers for Disease Control and Prevention (2016) reports global incidence rates of autism are 1 or 2 out of 100, affecting all children regardless of race, ethnicity, or socioeconomic background. Yet rates of diagnoses differ between Hispanics and White non-Hispanics. A number of factors influence the probability and timeliness of an autism diagnosis as well as the likelihood of pursuing autism treatment. Some of these factors include: (a) the role of health care providers in the diagnostic process (Bordini et al., 2015; Magaña et al., 2015; Miller et al., 2011; Zuckerman et al., 2013), (b) the role of cultural influences which affect parental perceptions and expectations (Glazzard & Overall, 2012; Lawton, et al., 2014; Zuckerman et al. 2014), (c) the limited family and social supports available to assist coping and dissemination of ASD information and reduce stigma (Boujut et al., 2016; Grinker et al., 2015; Tonnsen & Hahn,

2016), and (d) the economic strain placed on families affected by ASD (Lavelle et al., 2014; Leigh & Du, 2015; Sharpe & Baker, 2007).

A needs assessment was conducted to evaluate parental influence on their children's diagnosis and treatment for ASD. The needs assessment was a cross sectional quantitative study extended over a three-month period. In late April 2017, South Florida families registered at the University of Miami's Center for Autism Related Disabilities (UM-CARD), received a weekly e-mail blast which included an invitation to participate in an online and anonymous survey. The survey included 31 questions requesting families to share their personal experiences regarding the diagnosis and treatment of their children with ASD. The results of this survey provided the development of an intervention aimed at reducing or eliminating certain factors that interfere with a timely and appropriate diagnosis and the pursuit of effective treatments for the Hispanic child with ASD. The rationale for the needs assessment is described below.

Rationale for the Study

The needs assessment was conducted to explore Hispanic families' experiences within the diagnostic process and subsequent treatments for children with ASD. Hispanics are the fastest growing and largest ethnic group in the United States (Larkey et al., 2001; Magaña et al., 2013) and as ASD incidence rates are also rising, a disparity in under diagnoses between Hispanics and White non-Hispanics persists (Liptak et al., 2008; Magaña et al., 2013; Magaña et al., 2015; Zuckerman et al., 2013; Zuckerman et al., 2014). Additionally, access to effective treatments among Hispanic families has been reported to be limited (Willis et al., 2016). While early intervention has been associated with positive outcomes for a child with ASD (Bordini et al., 2015; Irvin et al., 2011; Kogan et al., 2008; Liptak et al., 2008), limited access to this type of intervention can have clear long-term consequences.

The needs assessment was distributed through the University of Miami-Center for Autism and Related Disabilities (UM-CARD), located in Miami-Dade County. This county has a highly concentrated Hispanic population, 66.8% as per the United States Census Bureau (2016). This study sought to explore factors that influence the probability that Hispanic parents would pursue a diagnosis and treatment for their child with ASD. The survey was developed to address the following research questions:

- Do parental preconceptions and behavioral expectations affect the timeliness of Hispanic children's autism diagnosis?
- What are the effects of income on parent involvement?
- Does the education level of the parents impact what types of therapies the family chooses to pursue?
- Does the level of parental autism awareness impact what types of therapy the family chooses to pursue?
- What is the relationship between health insurance coverage and pursuing specific treatments?
- Do Hispanic parents wish to be more involved in their children's therapy?

Methodology

Participation

Approximately 40,000 families received a link to the survey in a weekly e-mail blast sent to UM-CARD's database. Criteria for inclusion as a participant was an ASD diagnosis based on a self-report by the parents. Diagnosis by a medical professional was not verified. The 50 participants were parents of children with ASD or other related disabilities who were registered at UM-CARD. Of the 50 responses, three children had a diagnosis other than ASD. These three

were excluded from the study to meet the above criteria for inclusion, resulting in a final number of 47 total participants (n= 47). However, it is important to note that not all participants completed the survey in its entirety.

Demographic data are reported in Table 1. Mothers were the primary respondents at 90%, with fathers included in the remaining 10%. The majority of the participants were Hispanic at 63%. Eighty-five percent of respondents completed the survey in English with the remaining respondents selecting the Spanish version survey. However, 88% of the respondents stated a preference for communication in English. More than half the respondents had achieved higher education with 45% reporting a graduate degree; 33% reporting a bachelor's degree, 7% reporting an associate's degree, 13% reporting at least some college education, and 2% reporting a high school degree. More than half the participants indicated an annual household income greater than $75,000 (65%) while others reported incomes scattered across a wide range. For example, 5% reported an income below $30,000 a year, 22% earned between $30,000 and $50,000 a year, and 8% reported earning between $50,000 and $75,000. Most of the participants reported having health insurance (95%) although only 65% indicated coverage for autism related treatments.

Table 1

Detailed Summary of Demographic Information

Variables	Levels	N*	%
Role	Mother	12	85.7
	Father	2	14.3
Preferred Language	English	13	92.9
	Spanish	1	7.1
Ethnicity	Hispanic	11	78.6
	non-Hispanic	3	21.4
Education Level	Did not attend school	0	0.0
	Less than high school	0	0.0
	High school degree	0	0.0
	Some college	2	14.3
	AA degree	1	7.1
	Bachelor's degree	3	21.4
	Graduate degree	8	57.1
Income	Less than $30,000	1	7.1
	$30,001-$50,000	2	14.3
	$50,001-$75,000	1	7.1
	$75,001-$100,000	1	7.1
	$100,001 or more	8	57.1
	No answer	1	7.1
Health Insurance	Yes	14	100.0
	No	0	0.0
ASD Coverage	Yes	8	57.1
	No	5	35.7
	No answer	1	7.1

**Not all participants responded to all the questions in the survey.*

Measures

The constructs measured included: parental experiences with an ASD diagnosis and treatments; parental perceptions and awareness of developmental milestones and ASD symptoms; and levels of parental involvement in the child's treatments. The three constructs were measured through the completion of the online, anonymous survey which included 31-questions focusing on parental experiences of the diagnostic process and the pursuit of effective treatments for their children with ASD. The last seven of these items were demographic questions to identify the respondents' relationship to the child with ASD, their preferred language, ethnicity as Hispanic or non-Hispanic, level of education, annual household income, and health insurance and specific coverage for services related to autism. The survey also included two open-ended questions. The first asked parents what other services they would have liked their child with ASD to receive and the second asked if they would like to share additional information about the diagnostic and treatment process of their child. Below is an overview of the questions that addressed each construct measured. See Appendix A for a full version of the survey.

Parental experiences with the diagnostic process and treatments. This construct was measured by employing eight multiple choice questions, asking for information about the child's specific diagnosis, age it was given, type of provider giving the diagnosis, patient's preferred language spoken by the provider, diagnosis received in a timely fashion, and any factors that presented a barrier to diagnosis. Parental experiences with treatments following a diagnosis were measured with five multiple choice questions. Questions focused on the provider offering additional information regarding the diagnosis and the provider offering recommendations for

further treatment. If treatments were recommended, one of the questions allowed for respondent to report on the types recommended. Additional questions focused on the types of therapies parents pursued, the timeline for when those services were received, and any factors that presented a barrier to treatment. An open-ended question was presented for respondents to report the types of treatments the parent wanted to receive but was not available. Finally, using a Likert scale, participants were asked to rate which, if any, of the therapies pursued resulted in perceived improvement in the child's symptoms. Five therapies were listed, and an "other" option was provided. See Appendix A for the full survey.

Parental perceptions and awareness of developmental milestones and ASD symptoms. Parental awareness was examined by asking three multiple choice questions about concerns of their children's behavior and other symptoms prior to receiving a diagnosis. Queries focused on identifying if the parent had developmental concerns prior to diagnosis, identifying if other individuals were involved in recommending the child receive further screening, and determining if the parent knew about ASD was before a diagnosis was received. A Likert scale question asked parents to rate what signs in their children triggered concerns with their development. Eight specific symptoms were listed and an "other" option was provided. See Appendix A for the full list of questions and answer options.

Levels of parental involvement in the child's treatments. Parental involvement was explored by asking four multiple choice questions about whether therapies took place in the home or elsewhere, the parents' participation in therapies, their level of interest in participating more with their child's therapy sessions, and if there were open lines of communication with the therapist about their child's progress. A Likert scale question asked parents if they would be interested in participating in training programs in speech therapy, occupational therapy, physical

therapy, ABA, or another treatment option. See Appendix A for a full list of questions and answer options.

Data Collection Methods

The online survey was created through Johns Hopkins University's student account on Qualtrics. The survey was distributed through UM- CARD's weekly e-mail blast to South Florida families registered with their center and other statewide partners. The e-mail included a flyer advertising the study and two anonymous links, one in English and one in Spanish. The responses to the survey were collected and housed on Qualtrics. Data from the surveys were viewed and analyzed in report mode on Qualtrics and by exporting into an Excel worksheet for further analysis.

Two versions of the survey were prepared, one in English and one in Spanish. Both versions were presented to a bilingual tester, a native Spanish speaker who is also a parent of a child with ASD for a pilot trial. This person completed both versions and suggested a few modifications in the Spanish version to do with language usage. Once approved for distribution, the consent form was incorporated into the survey as the first question, requiring participants to read and click on the next button as an indication that they had read and given their consent to form part of this research study.

Results

Data analysis was conducted using data reports from Qualtrics and Microsoft Excel. Descriptive analysis of quantitative data was performed by computing means, sums, and percentages to the responses. Below the results are reported according to the three measured constructs: experiences with the diagnostic and treatment process, parental awareness of ASD, and parental involvement.

Parental experiences with the diagnostic process and treatments

All the participants reported a diagnosis of ASD although the age of the child at the time of diagnosis varied with 30% responding two-years old, 35% at three-years old, 19% at four-years old, 5% at five years and 21% reporting a diagnosis at six years or older. Fifty percent of the children were diagnosed with additional disorders or comorbidities although data were not collected on the types of disorders. Diagnoses of ASD were provided by the following types of providers; neurologist (60%) school psychologists (9%), psychiatrists (2%), and psychologists (20%). Diagnoses were made by other specialists (9%) including developmental pediatricians, a panel of school specialists, and a physician in a hospital. In 95% of the cases, parents reported that health care providers spoke to them in their preferred language (See Table 2).

Table 2

Detailed Summary of Parental Diagnostic Experience

Variables	Levels	N	%
Diagnosis	ASD	47	100
Age at diagnosis	2	13	31
	3	14	33
	4	8	19
	5	2	5
	6+	5	12
Comorbidity	Yes	21	50
	No	21	50
Who diagnosed	Neurologist	26	60
	School psychologist	4	9
	Psychiatrist	1	2
	Psychologist	8	20
	Other	4	9

**Not all participants responded to all the questions in the survey.*

Fifty-five percent of parents reported that their child did not receive a diagnosis within an adequate amount of time and attributed this delay to varying factors. Forty percent of the participants who believed the diagnosis was delayed opted for the "other" option yet did not fill out a response in the space provided. It is normal for children to have tantrums and misbehave (21%) was the next most common answer, followed by the reason that family members gave the parents no reason to believe there was a problem with their child's behavior (18%). Beliefs that two languages in the home or typical language delays in their child's development (10%) and no

concern with their child's development at the time (10%) were the other factors that contributed to a delay in their child's ASD diagnosis. See Figure 2 for parent responses for this delay.

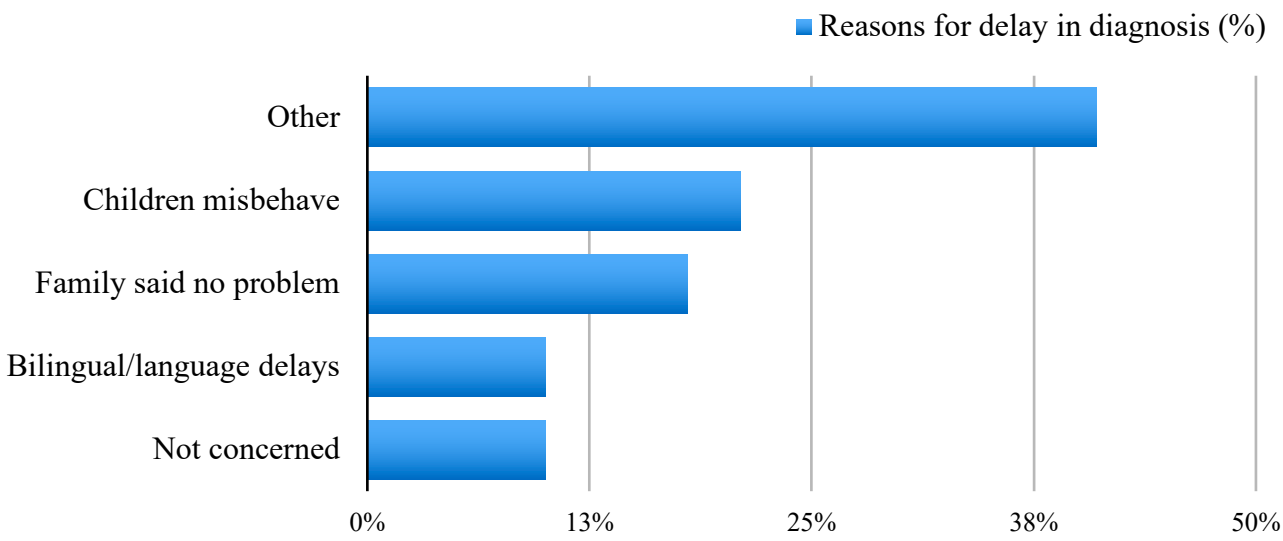

Figure 2. Reasons Parents Provided for Delay in their Child's Diagnosis.

Participants responded that 76% of the health care providers who diagnosed the children provided information on possible treatments for the child with ASD. The most commonly prescribed treatment was speech therapy (60%), followed by occupational therapy (58%), and ABA (58%). Early intervention services were also suggested (30%) as were physical therapy (9%) and various other treatments such as equine therapy and social skills (9%). The most sought treatments by parents for their children were speech therapy (88%), occupational therapy (81%), and ABA (72%). Early intervention was provided (58%) as was physical therapy (30%) and equine therapy and social skills (14%). The therapies and treatments recommended, along with the actual therapies pursued by parents are documented in Table 3. Parents perceived progress in their children's development with all of the therapies.

Table 3

Summary of Suggested Interventions and Those Actually Sought

Therapies	Doctor suggested	Child received
Speech Therapy	60%	88%
Occupational Therapy	58%	81%
Physical Therapy	7%	30%
ABA	58%	72%
Early Intervention	30%	58%
*Other	9%	14%

**Other therapies prescribed by the doctor and received by the children were equine therapy and social skills.*

The final two multiple choice questions regarding experiences with therapies asked parents to report if their child received therapies within an adequate amount of time following a diagnosis and, if not, what reasons could contribute to the delay. Seventy-six percent of the respondents reported that they received therapy within a reasonable time frame. Of those who reported a delay in therapy the following reasons for the delay were indicated: insurance did not cover treatment (30%); wait list at provider (12%), or too expensive (16%); and scheduling conflicts (12%). Thirty percent listed other reasons for the delay such as not knowing where to go for services, insurance process took a long time, and that the school did not offer these services. Questions to report on if the child received any services following the reported barriers were not presented. An open-ended question concluded the section collecting information on parental experiences with their children's diagnostic process and the following treatments. The question asked what treatments were of interest that were not specifically outlined in the multiple-choice options. Subjects' responses noted the need for tutors for academic skills, animal

therapy, music therapy, social skills, early intervention, Floortime, and more integration of therapies and support services in the school system.

Parental perceptions and awareness of developmental milestones and ASD symptoms

Questions inquiring as to who reported initial concerns in the child's development suggests that parents were primarily concerned with their child's development in 60% of the cases, while a mutual worry of the doctor and the parents resulted in 26% of the responses. In 14% of the cases, the doctor raised concerns while the parents were not alerted to any developmental delays. Seventy-one percent of the parent respondents knew what autism was before their child received a diagnosis. The symptoms that alerted parents to their children's developmental delay were a lack of socialization (74%), delayed speech (64%), tantrums (57%), poor eye contact (50%), inappropriate playing with toys (50%), and self-stimulatory behaviors (50%). Less frequently observed was a regression or loss of language (33%), self-injurious behaviors (19%) and other symptoms (17%) such as physical development and repetitive behaviors. Figure 3 below identifies which symptoms raised the most unease among parents.

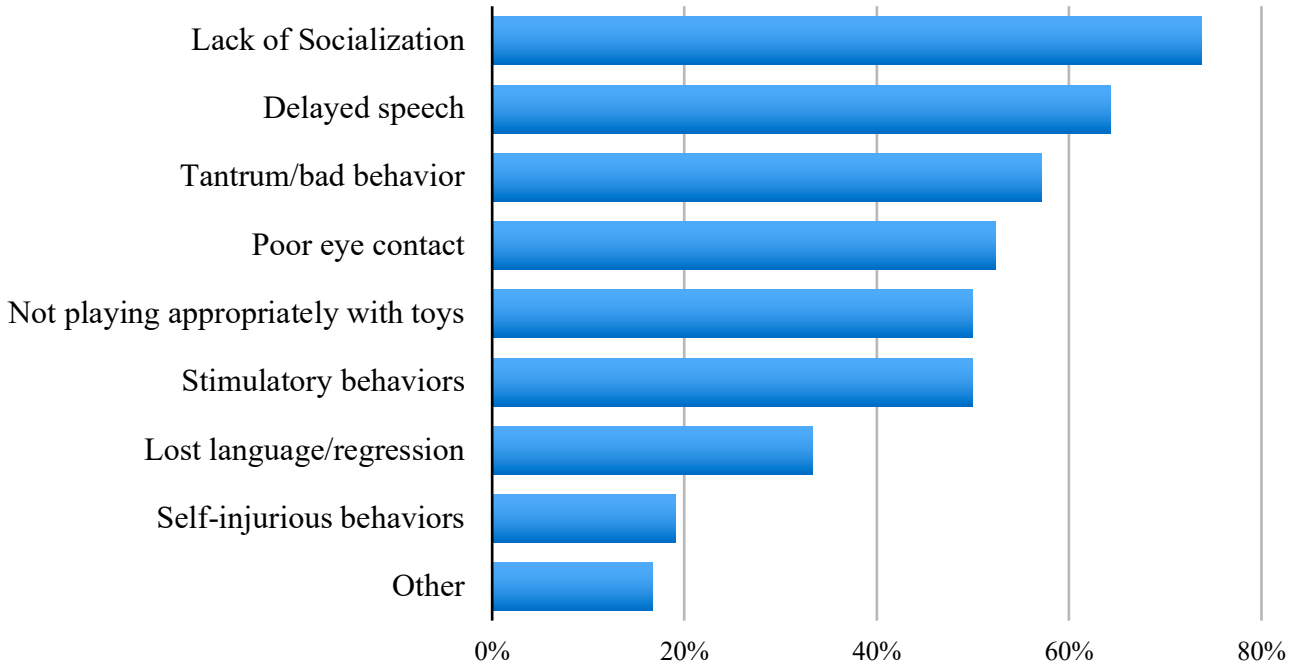

Figure 3. Symptoms that Raised Parental Concern about their Children's Development.

Levels of parental involvement in the child's treatments

Treatments provided in the family home were reported by 63% of respondents and 93% stated open lines of communication with their children's service providers. Seventy-eight percent of the parents reported participation in their child's therapy sessions, and 98% of reported an interest in a more active role in their child's treatment. Parents who completed the survey expressed an interest in parent training in specific treatments their children were receiving. ABA was of most interest to parents (27%), followed by occupational therapy (22%), speech therapy (20%), physical therapy (19%), and other treatments (15%) which the respondents did not identify. Figure 4 illustrates which therapies parents would be most interested in receiving training.

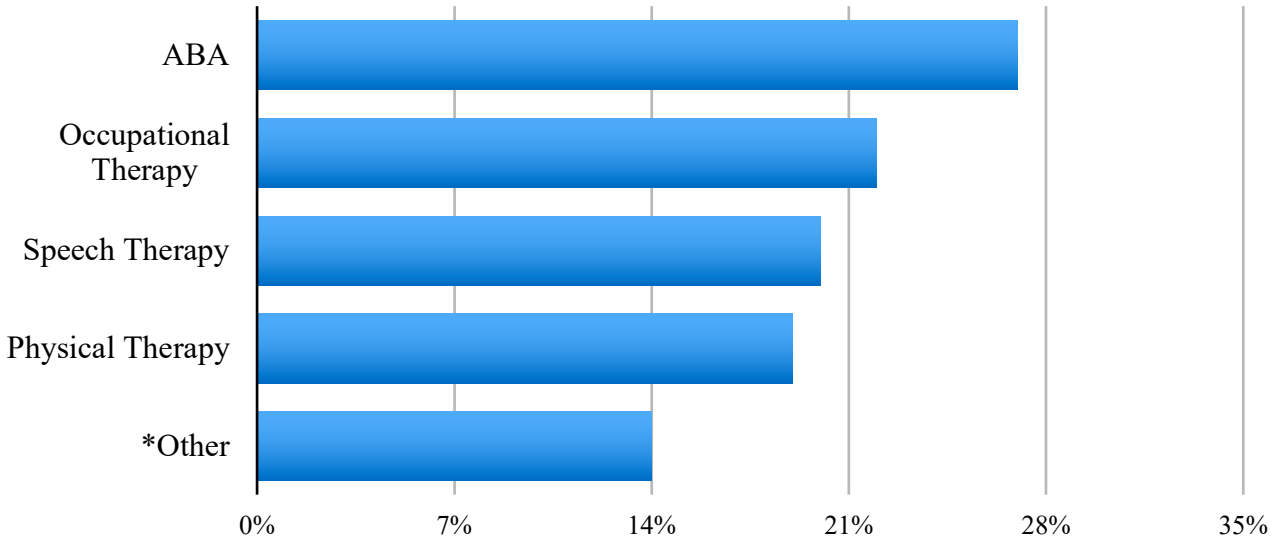

Figure 4. Parents Demonstrated Interest in Certain Training Programs to Assist their Children with ASD.

Summary

The following summary references each of the research questions to verify that concepts identified were indeed addressed in the needs assessment.

Do parental preconceptions and behavioral expectations affect the timeliness of Hispanic children's autism diagnosis? Eighty-six percent of parents expressed concern regarding their children's development and 71% reported familiarity with ASD prior to their children's diagnosis. These numbers suggest increased parental awareness of autism and could be attributed to the high education levels of the participants (78% holding a bachelor's degree or higher). Sixty-five percent of participants reported that their children were diagnosed at three years of age or younger thus suggesting potential positive outcomes if these children receive effective treatment. However, 55% of these parents reported that, in their opinion, the diagnosis

was not made within an adequate amount of time. Data was not separated by ethnicity due to a flaw in the set up of the survey. These findings suggest that although parents were aware of ASD and developmental milestones, medical providers did not diagnosis their children in a timely manner.

What are the effects of income on parent involvement? More than half the participants of this survey have an annual household income in excess of $100,000 which exceeds the Florida median income of $45,500 (United States Census Bureau, 2016). A high rate of parent participation in their children's therapy sessions was reported (68%) and 94% reported interest in pursuing parent training that would help them learn more and become more involved in their children's treatments. It is possible to draw a positive correlation between high income levels and high levels of parent involvement. However, since the data is skewed towards high income families, only 5% of participants reported income lower than $30,000 a year, it is not feasible to compare parents' levels of involvement for those families with lower incomes.

Does the education level of the parents impact what types of therapies the family chooses to pursue? Seventy-eight percent of participants had a bachelor's degree or higher which indicates a significant difference with Florida state's median of 27%. Health care providers recommended speech therapy, occupational therapy, and ABA most frequently as treatments for children with ASD. These three same therapies were also selected most often by parents for their children. The higher percentage of educated participants in the study could present a biased view of treatments selected for their children. A comparison would have to be made with parents of lower educational levels to verify that these same treatments would be chosen.

Does the level of parental autism awareness impact what types of therapy the family

chooses to pursue? Seventy-one percent of parents reported knowing what ASD was prior to their own children's diagnosis. Research studies identify ABA as an evidence-based treatment and the most effective one for children with ASD. ABA is recommended by the American Academy of Pediatrics, the Center for Medicaid and Medicare Services, and the United States Surgeon General among others (Landa & Kalb, 2012; Myers, 2007; United States Surgeon General, 1999; US Department of Health and Human Services, 2010). However, even though parents selected ABA (72%) as one of the top three treatments for their children, speech therapy (88%) and occupational therapy (81%) were selected more frequently. This difference could be attributed to health insurance coverage or that, although parents were familiar with symptoms of ASD, they were not familiar with specific treatments.

What is the relationship between health insurance coverage and pursuing specific treatments? A majority of the participants (95%) had medical insurance. However, only 65% of these had ASD benefits. Speech therapy (88%), occupational therapy (81%), and ABA therapy (72%) were the most sought after treatments. ABA is a treatment that is only covered under ASD benefits while speech and occupational therapy are available under regular insurance coverage. This could have affected the popularity of speech and occupational therapies over ABA.

Do Hispanic parents wish to be more involved in their children's therapy? Sixty-three percent of participants identified as Hispanic. Seventy-eight percent of participants reported involvement in their children's treatment and 98% expressed interest in learning more and receiving training to provide these treatments to their children themselves. Although data was not separated by ethnicity, all participants, with one exception, reported wanting to become more active in their children's treatment. The almost unanimous desire to become more involved suggests ethnicity does not play a factor.

Limitations

Although the sample size is small given the potential for total responses, there are some limitations already evident with the needs assessment. Participants were well-educated with 33% of participants holding a bachelor's degree and 45% holding a graduate degree. Over half the participants reported a household income over $100,000 per annum which is not representative of the population in Miami-Dade County or the entire state of Florida (United States Census Bureau, 2016). More than half (63%) of the participants identified as Hispanics. Unfortunately, the survey was not set up to separate findings by ethnicity, Hispanic compared to non-Hispanic, which may have presented a different perspective in the interpretation of the results. Considering that the e-mail blast was sent out to a database of 40,000 families, only 50 results were available for analysis after three months of weekly e-mail blasts to the database of registered UM-CARD families. This small sample size may not be representative of the population. A final limitation of the needs assessment was that not all the participants answered all of the questions in the survey.

Implications for Future Research

The results of the needs assessment provide some implications for future research to address the problem of practice. The evolving and future definitions of ASD could be actionable. The Diagnostic and Statistical Manual of Mental Disorders III (DSM-III) was published in 1980 and separated the diagnosis of autism from schizophrenia. The release of the DSM-5 in 2013, 947 pages in length and encompassing over 300 disorders, reflects a broadening of the definition and a paradigm shift as it officially recognized autism as a developmental disorder with biological roots. These frequent changes require that providers remain updated on the shifting criteria and understand how to screen, and this provide a correct and appropriate diagnosis. Any future changes to the ASD definition cause confusion for both provider and

family members of patients as to what constitutes a true diagnosis. Future research could focus on providers who diagnose patients with autism and explore the best way to maintain providers informed of current policy and screening tools.

As cultural values and beliefs are deeply ingrained in Hispanic family lives, providers working with the Hispanic population should be encouraged to receive cultural sensitivity training programs. Awareness of differences in cultural values could positively influence the likelihood of a legitimate and timely autism diagnosis. Research into provider training, especially those that raise levels of cultural sensitivity, could be an area of further investigation. Examining factors that affect a diagnosis and treatment from the perspective of culture on the home environment provides insight into deep-rooted family values like respect, leaning on extended family for emotional support, and religion which are all hallmarks of Hispanic culture. Future research should examine how to improve Hispanic parental awareness of developmental milestones and ASD prior to an official diagnosis. Another area of future research could be to delve deeper into possible treatment options and effective interventions that are accessible to Hispanic families. Levels of parental involvement and the effects of this involvement and parent training on their self-efficacy when interacting with their children could be another interesting area to investigate as this could determine possible interventions for parents of children with ASD.

Chapter 3: Evaluating an Online Parent Training Program for Hispanic Families with Children with Autism Spectrum Disorder

Chapter Overview

Although the increasing prevalence of ASD may be due to rising awareness or due diligence in diagnosing, a significant disparity remains in the diagnostic rate between Hispanics and non-Hispanics in the United States (Liptak et al., 2008; Magaña et al., 2013; Magaña et al., 2015). Furthermore, Hispanics are less likely to receive evidence-based treatment for ASD (Levy et al., 2003). Given the limited access to services for Hispanics and their families, an online parent training program may present a feasible solution to support Hispanic parents of children with autism spectrum disorder. The following chapter provides an overview of autism spectrum disorder, explores the impact of the diagnosis on families, and examines the barriers to treatment contributing to limited access to services for the Hispanic community. The chapter continues by reviewing the literature support for several behavioral approaches based upon applied behavior analysis, an established evidence-based treatment to address deficits in ASD. Following the literature review is a section outlining the benefits of parents implementing behavioral strategies to address barriers to treatment and decreasing the negative impacts of ASD on families, specifically between the parent and the child. The next section will provide an overview of online methods for providing training and education. This chapter concludes with a review of the research literature on training parents to apply behavior analytic approaches and the resulting positive outcomes for parents.

What is ASD?

Autism spectrum disorder (ASD) affects all people, regardless of country of origin, race, ethnicity, or socioeconomic status, suggesting a global epidemic of increasingly growing

proportion (Centers for Disease Control and Prevention, 2017). Approximately 1 to 2% of the global population is diagnosed with ASD (Centers for Disease Control and Prevention, 2017). ASD is a pervasive developmental disorder and therefore has an impact across an individual's life span. ASD may affect children in varying degrees but, in all cases, the individuals exhibit impairments in communication and socialization as well as limited interests and repetitive behaviors. Physical symptoms do not typically accompany an autism diagnosis. Instead, the primary manifestations are difficulties with socialization, language and communication, and stereotypical or repetitive behaviors (Centers for Disease Control and Prevention, 2016). Symptoms typically develop before the age of three and individuals with ASD demonstrate abilities that range from gifted to severely challenged (Centers for Disease Control and Prevention, 2016). Although the identification of ASD does not appear to be based on race or ethnicity, children from ethnic minorities are less likely to be diagnosed with ASD than their non-minority peers (Mandell et al., 2002; Ratto et al., 2016; Zuckerman et al., 2013; Zuckerman et al., 2014). The medically recommended and only authorized treatment for ASD by the American Medical Association is applied behavior analysis (ABA). ABA is an evidence-based treatment that relies on the science of learning and behavior. This approach to treating ASD modifies behavior by manipulating the environment, providing reinforcement, and measuring the results. These services are provided when a clinician deems it a medically necessary treatment to address the individual's deficits in communication, social interaction, and disruptive behaviors (Behavior Analyst Certification Board, 2014).

Impact of ASD on Families

Symptoms and behaviors associated with ASD can have a profound impact not only the child, but the entire family as well. Disruptive behaviors and impairments associated with the

disorder can complicate the parents' marital relationship, the relationship of the child with siblings, and even relationships with extended family members (Smith & Elder, 2010). The relationships are further affected by parent stress levels which are directly related to the severity of the child's challenging behaviors (Harper, Dyches, Harper, Roper, & South, 2013; Miranda et al., 2015). In addition to impacting the immediate family, stress from caring for a child with significant communication deficits and behavioral challenges can affect the child's and family's interaction in the community. Financial burdens present yet another significant impact on the families as they incur the costs associated with a child with ASD whether it is for treatment or as a result of a reduced workload to have more time to care for the child. It is important to understand the far-reaching impacts of an ASD diagnosis for both the child and their family to develop appropriate parent training interventions to alleviate aspects of the diagnosis that may affect access to effective treatment.

Impact on Immediate Family

Parenting a child with ASD is a trying experience with many challenges for which most parents are unprepared. “Parenting stress is a specific type of stress that arises when the parents’ perceptions of the demands of their role as parents surpass their resources to cope with them” (Miranda et al., 2015, p. 82). Children with ASD require increased parent attention given their limited communication and self-help skills and maladaptive behaviors. The severity of symptoms can affect parent-child interactions, especially if the child exhibits aggressive and self-injurious behaviors (Green et al., 2017; Hall, 2012). Another area in which ASD can have an adverse impact on families is difficulties with sleep. Many children with autism tend to have disrupted sleeping patterns which can have physical as well as emotional consequences on the parents. Sleep deprivation can lead to parent stress and fatigue (Glazzard & Overall, 2012). Furthermore,

a parent who is tired and stressed will have a reduced ability to cope with their child's challenging behaviors. Interventions that focus on modifying the environment and adjusting responses to behaviors may increase compliance, improve language and socialization, improve sleeping patterns, decrease disruptive behaviors, and improve the overall quality of life for the entire family (Solomon, Ono, Timmer, & Goodlin-Jones, 2008).

ASD affects the functioning of the entire family which can cause psychological, social, and financial stress (Dyches, Christensen, Harper, Mandelco, & Roper, 2016). Parents of children diagnosed with ASD and ADHD suffer from more stress than parents whose children have other intellectual disabilities or even physical disabilities like cancer or diabetes (Magaña et al., 2015). As a result of the increased stress, parents of children with ASD are more likely to suffer from psychiatric illnesses than parents of typical children (Glazzard & Overall, 2012). Stress levels tend to be higher in mothers than in fathers which appear to be due to the traditional roles and division of household chores typically assigned to the female caregiver. The division of labor in which mothers assume the primary role for caring for a child with a disability is indicative of all families, and not just Hispanic households (Hartley, Papp, & Bolt, 2016). The partner, or spouse, is the most valuable support for the parent with a child with ASD and co-parenting has been noted to significantly reduce stress levels (Sim et al., 2017).

The relationship between parents and between parents and children define the family dynamic and how the family as a whole can function in daily life. Siblings play an important role and may also experience difficulties adjusting to the diagnosis of ASD, such as stress and depression (Smith & Elder, 2010). However, most studies on siblings have focused on the biological and genetic components of ASD rather than the sociological and psychological implications. Although siblings may be negatively impacted by their brother or sister's disability,

there are also positive effects. Sibling involvement in managing behavioral problems resulted in overall fewer maladaptive behaviors by the affected sibling. Additionally, the typical siblings were found to be more patient, empathetic, have a "higher self-concept and social competence levels" (Smith & Elder, 2010, p.190). Parent training can help address the effect on the immediate family by providing strategies for parents to apply to reduce challenging behaviors, including disruptive sleeping patterns.

Social Impact

Caring for a family member with ASD requires that the caregiver devote a significant amount of time to their care (DePape & Lindsay, 2015). Oftentimes, children with ASD require increased parent attention which may limit their child and the parents' opportunities to participate in social and community activities. When the child with ASD exhibits problematic behaviors, this can be stressful, alter daily routines that involve socializing with others, and reduce time spent with significant others, family members, and friends (Sim et al., 2017). There is a high rate of agreement that families living with ASD feel socially stigmatized which impacts not only the child but has repercussions on the entire family like peer rejection and exclusion from social activities (Kinnear et al., 2016). When parents have a strong, informal, social support, they have lower stress levels (Minjarez, Mercier, Williams, & Hardan, 2012). Interventions that focus on reducing the children with ASD's excess behaviors may have a positive impact on reducing parenting stress and thereby provide opportunities for social inclusion.

Financial Impact

Economic factors such as low-level SES, limited access to health insurance, and prohibitive costs associated with interventions and diagnosis can also have a negative impact on

the family. Each of these factors contribute to the ever-growing economic impact on families affected by autism and emphasizes the limited financial resources available to help them subsidize the cost. However, costs associated with health care are not the only source of expenditures for a family living with autism. Many costs fall outside the health care system, such as caregiver time, autism-specific interventions, and special needs services at school. Additionally, parents may need to sacrifice work for the care of their child on the spectrum, placing them at higher financial risk (Leigh & Du, 2015). The main economic burden thus falls on the family, with current lifetime cost estimates at $3.2 million per individual with autism (Lavelle et al., 2014). Although the costs of treatment may be a health care and policy issue, providing a cost-effective service like an online parent training may help reduce the financial impact on parents and also serve to reduce their stress levels.

Barriers to Treatment

While the impact of ASD on the family is evident, many of these effects can be lessened by effective treatment and intervention. However, barriers exist for accessing treatment for Hispanic families. The most commonly encountered are the under diagnosis of the disorder, the lack of health care coverage, the scarcity of providers, the financial burden to families, and cultural adaptation issues. It is important to examine the difficulties families face in accessing treatment to develop a parent training intervention that can aid in the reduction of the identified barriers.

Under Diagnosis of Hispanic Children

Although the Hispanic population is growing, and ASD incidence rates are rising, there remains a significant disparity in diagnoses between Hispanics and White non-Hispanics (Liptak et al., 2008; Magaña et al., 2013; Magaña et al., 2015; Zuckerman et al., 2013; Zuckerman et al.,

2014). A factor for the disparity in diagnosing Hispanics is the inconsistency in doctors' diagnoses (Magaña et al., 2015). A possible contributor could be the changes to the definition of autism as published in the Diagnostic and Statistical Manual over the years. The release of the most recent publication, the DSM-5 in 2013, 947 pages in length and encompassing over 300 disorders, reflected this broadening of the definition. Smith et al. (2015) include a study in their article comparing patients diagnosed under DSM-IV and those diagnosed following the new criteria outlined in DSM-5. The authors suggest that under these new standards, many people who were receiving services under the prior DSM might find themselves excluded, specifically those previously diagnosed with Asperger's or Pervasive Developmental Disorder- not otherwise specified (PDD-NOS). This is especially relevant to Hispanics because the relationship with the provider needs to be "warm and trusting" and dialogue needs to be "ongoing, respectful, and family like" (Estrada & Deris, 2014, p. 4) in order to for the parents to feel comfortable and share personal information about their child's development. This relationship and dialogue may be difficult to achieve if there is difficulty in establishing a personal connection and if there are language barriers to overcome.

An additional factor that may influence the under diagnosis of Hispanics is the quality of the interaction between the Hispanic patient and the medical provider. Hispanics are less likely to rate their interactions with doctors as positive stating the doctors did not dedicate enough time to the patient, did not listen to the parents, and exhibited a lack of cultural sensitivity (Magaña et al., 2015). The limited time spent with a patient is an important contributor to the under diagnosis. If the doctor does not have time to dedicate to getting to know the patient and observe and rate the behaviors of the patient, this could lead to a missed diagnosis. Additionally, the ASD diagnosis relies upon observation and the parents sharing their experiences and observations of

their child. If the parent and provider cannot communicate effectively in English and/or Spanish and cultural differences are not accounted for (Magaña et al., 2013), it is another missed opportunity to accurately identify symptoms that could contribute to an accurate diagnosis of autism spectrum disorder. A diagnosis of ASD is the child and the family's gateway to receiving services. If the rendering medical provider does not diagnose the child, the family will be unable to access services and seek appropriate treatment.

Lack of Health Care Coverage

Related to the under diagnosis of ASD, is the limited access to effective treatments among Hispanics (Willis et al., 2016). While the initial under-diagnosis of the disorder is a major barrier to treatment, several additional factors hinder access to treatment for all individuals diagnosed with ASD. Health care coverage is a factor that can impact access to treatment and presents specific challenges with the provision of ABA services. Although certain health care plans include benefits for individuals with ASD, deductibles, co-pays, and scheduling conflicts affect the likelihood that children who are eligible for behavioral services receive the required ABA services in the recommended amounts (Parish et al., 2015). A lack of health insurance and not having a consistent source of care are two of the main barriers to health care (Escarce & Kapur, 2006). Hispanics are typically linked to lower socioeconomic levels and immigrant status (Parish et al., 2012), this can influence their access to insurance and their non-ability to cover out-of-pocket expenses. Health care coverage is barrier to treatment for Hispanic families because Hispanics are two times more likely to be uninsured compared to non-Hispanic whites (Escarce & Kapur, 2006). However, it should be noted that uninsured rates for foreign born Hispanics are higher than for those who are born in the United States. Additionally, Hispanics are less likely to receive health insurance as a benefit from an employer compared to non-

Hispanic whites (Escarce & Kapur, 2006).

Scarcity of Providers

Lack of health care coverage and financial hardships may restrict access for Hispanics to qualified providers. Services may only be rendered through health insurance by credentialed providers certified as behavior analysts (Florida Statutes, 393.13(4)(g)3, 2018). Currently, there are 84,000 therapists worldwide certified to provide ABA including the different certification levels such as BCBA-D, BCBA. BCaBA, and RBT. Of these, 40,000 possess the higher-level credential of BCBA or BCaBA and can assess, create programs, and supervise the remaining 66,000 lower level certificates (RBT, BCaBA) who implement the treatment plan (Behavior Analyst Certification Board, 2019). In Florida, there are 4,000 higher level certificates but there is no data available to identity which of these are bilingual or culturally competent to provides services to Hispanic families. With an estimated 3 to 6 million individuals affected with ASD in the United States, there are not enough qualified people certified to practice ABA and offer services to those in need given the volume of individuals diagnosed with ASD. While health insurance coverage creates a specific barrier to access, the limited number of qualified professionals to serve the increasing numbers of children with ASD has a greater impact on access to effective treatment. The scarcity of providers is relevant to all individuals affected with ASD who seek ABA services, but it especially affects Hispanics as of the available providers, only some can offer services in the family's native language.

Financial Burden

Underpinning access to services and effective intervention is the associated financial expenses of paying for treatments. Hispanics tend to be from low-income families and many also have immigrant status which can influence their access to health care coverage and their inability

to cover out-of-pocket expenses (Parish et al., 2012). As mentioned earlier, the current estimated lifetime cost per person with ASD is $3.2 million (Lavelle et al., 2014). With services expected to take place over an extended period, and the child not likely to be gainfully employed in adulthood (Jacob, Scott, Falkmer & Falkmer, 2015), the economic impact to the families as a result of caring for their child on the spectrum represents a significant financial burden over their lifetime. The financial situation of the Hispanic family could present a significant barrier to treatment as Hispanics are less likely to have medical insurance thus bearing the full brunt of paying for services out of pocket.

Cultural Adaptation

The barriers to treatment that have been identified are also factors that many Hispanic families experience and may result in Hispanics being less likely to receive evidence-based treatment for ASD. Hispanics are the fastest growing and largest ethnic group in the United States (Larkey et al., 2001; Magaña et al., 2013). Approximately 437 million people of the world's population are native Spanish speakers and Spanish is the second most spoken language in the world suggesting a large potential market for a Spanish training program. However, autism outreach materials appear to have only been translated but may not have adapted to the intricacies of each culture thus raising the concern of social validity (Grinker et al., 2015). The cultural adaptation of materials is crucial as "cultural beliefs and discourse about a condition shape the way people identify and manage perceived abnormalities in a child's development" (Grinker et al., 2015, p. 2329). Although there have been many translations of professional materials, few are to educate parents and families. Additionally, there has been more emphasis on linguistic interpretation and less focus on the "social context and cultural beliefs" (Grinker et al., 2015, p. 2330). Although Grinker et al.'s (2015) study focused on Korean families living in

the United States, rather than on Hispanics, the implication that cultural subtleties are not addressed in autism educational materials aimed at families is valid and applicable to all cultures.

Access to health insurance, lack of providers, high cost, and cultural differences are all factors that contribute to the limited access to ASD treatment for Hispanic families. Given the limited access to services for Hispanics and their families, an online parent training program may present a feasible solution to support Hispanic parents of children with autism spectrum disorder. An intervention consisting of a parent training that is comprised of ABA strategies, online format, with a focus on the parent as the implementor and offered in Spanish could offer a potential solution to the problem of limited access to ASD treatment. The following literature review will provide evidence for the development of an online parent training program designed specifically for Hispanic parents of children with autism spectrum disorder to address the previously identified barriers to treatment access as well as decrease the negative impact of ASD on families. The review will begin by introducing ABA, an evidence-based practice for children with ASD, followed by the role of the parent as implementor of behavioral strategies in the context of the microsystem (Bronfenbrenner, 1994) to explain the importance of providing intervention at the level where the relationship between parent and child takes place In continuation, the review highlights the advantages of an online delivery format and the scarcity of research supporting the Spanish speaking community suggesting an opportunity for novel approaches in the training of Hispanic families. Finally, a series of research studies will be reviewed and components of each noted for their relevance to the creation of the online parent training program.

ABA: An Evidence-Based Intervention

The American Academy of Pediatrics, the Center for Medicaid and Medicare Services,

and the United States Surgeon General recommend applied behavior analysis as the preferred treatment for ASD and other behavioral conditions (Landa & Kalb, 2012; Myers, 2007; United States Surgeon General, 1999; US Department of Health and Human Services, 2010). Applied behavior analysis (ABA) is a science predicated on a set of principles that guide learning and behavior. ABA interventions apply these principles through a variety of strategies applied to increase desired behaviors and decrease disruptive or excess behaviors. "Many studies show that ABA is effective in increasing behaviors and teaching new skills...and are effective in reducing problem behavior" (National Autism Center, 2015). Based on the plethora of research supporting ABA evidence-based practices, ABA is considered the preferred approach to treatment for ASD as it addresses the goals of social significance, emphasizes generalization of skills to different settings and people, and customizes a treatment plan for each client (Florida Statutes 627.6686, 2018; MacDonald, Parry-Cruwys, Dupere, & Ahearn, 2014; Rivard, Terroux, & Mercier, 2014; Welch & Polatajko, 2016). A number of studies support the positive results of ABA in terms of development and reduction in special services if therapy is intensive (more than 20 hours per week) and delivered prior to the age of four years (Reichow, 2012).

ABA is a socially-validated and evidence-based practice with over 50 years of research supporting its use and is considered "the gold standard for treatment of children with autism spectrum disorder in most of North America" (McPhilemy & Dillenburger, 2013, p. 154). ABA focuses on teaching new behaviors and decreasing interfering behaviors through systematic instruction. Professionals who practice ABA complete formal training in academia followed by supervision in clinical settings. Services typically begin with structured sessions, and as the client progresses, the setting adjusts to a more natural environment to allow for generalization of skills. These services may be offered at home, in a center, a school, or in the community. The

duration and frequency of the services vary starting at 10 hours per week with a comprehensive program consisting of 40 hours per week (Behavior Analyst Certification Board, 2014).

In addition to promoting ABA for its research supported effectiveness, its tier-modeled delivery system suggests that ABA can be implemented by someone with minimal formal training (Hamad, Serna, Morrison, & Fleming, 2010; Lindgren et al., 2016). In a traditional ABA program, a clinician level practitioner assesses the client, custom creates a treatment plan, and then supervises a support staff member who implements the program (Hamad et al., 2010). A caregiver or family member could pursue a training program to learn basic behavioral principles, similar to the 40 hours registered behavior technician (RBT) training course required by support staff who are responsible for implementing behavioral strategies regularly (Behavior Analyst Certification Board, 2013). Access to qualified providers is difficult as there are approximately 80,000 certified ABA professionals (Behavior Analyst Certification Board, 2019), therefore providing parents with training can help them in dealing with their children's challenging behaviors while they are waiting for access to qualified caregivers if insurance is an option. Alternatively, if these families are not likely to access services through insurance or cannot afford the costly copayments, this parent training intervention will teach basic behavioral principles and strategies that could improve the quality of their life at home by addressing their children's behaviors. Furthermore, this training will be offered in Spanish thereby addressing the language barrier that may affect the effective communication of knowledge and behavioral strategies.

Although research points to the effectiveness of ABA as a treatment for children with ASD, the suggested frequency of 25-40 service hours per week is both cost prohibitive and time-consuming (Rivard et al., 2014). With many children lacking access to health insurance and

effective treatment, families turn to non-evidence-based practices (Levy et al., 2003). Findings suggest that Hispanic children are six times more likely to use non-traditional treatment than White non-Hispanics (Broder-Fingert et al., 2013; Mandell & Novak, 2005). These practices range from non-invasive biological treatments like vitamin supplements and dietary restrictions to neurofeedback therapy to potentially harmful biological interventions like chelation, an intravenous method of removing toxins from the body (Levy et al., 2003). The numbers of families participating in such non-evidence-based treatments may be underrepresented as parents may have been unwilling to share their experiences (Levy et al., 2003). The potential benefits of a parent training that is grounded in evidence-based practices should result in improved behaviors and communication and social skills in young children with ASD rather than alternative treatment options that are not supported by research. Several approaches concentrate on working with children on the spectrum in the early years to reduce disruptive behaviors and improve their communication and social skills. In the next section, three specific evidence-based models will be reviewed, and elements from each model will be highlighted as critical components to incorporate into an online parent training program.

Early Intensive Behavioral Intervention

Early intervention strategies using ABA principles result in better outcomes in social development, language, cognitive skills, and self-help skills than other interventions (MacDonald et al., 2014; Rivard et al., 2014; Makrygianni, Gena, Katoudi, & Galanis, 2018). The success of Lovaas' Early Intensive Behavioral Intervention (EIBI) has been replicated in numerous studies and demonstrates children's progress in communication and cognitive as well as adaptive skills (Fava & Strauss, 2011; Grindle, Kovoshoff, Hastings, & Remington, 2009). The effectiveness of this intervention is linked to the intensity and duration of the program, often requiring 40 hours

per week devoted to intervention as well as targeting very young children, between the ages of two and three. However, this model relies upon the delivery of services by professional providers of which there is a shortage and implies significant financial cost to the families (Peterson, Piazza, Luczynski, & Fisher, 2017). The research implies that families that cannot devote 40 hours per week may not observe significant results or lasting change (Fava & Strauss, 2011). Even when time can be dedicated to an intensive schedule of treatment, families reported dissatisfaction with the full-service home-based option because of disruptions to the family lifestyle (Grindle et al., 2009). From the research, the element of intensive delivery in the range of 40 hours per week has been identified as a critical component contributing to the effectiveness of the intervention. It is this element of intensity that contributes to the creation of an online parent training program. Whereas EIBI recommends a professional offer services to the child for 40 hours a week, parents who have been trained in behavioral strategies can provide support for their child 24 hours a day, seven days a week, thereby meeting and exceeding the recommended hours to achieve positive outcomes.

Parent-Child Interaction Therapy

Parent-Child Interaction Therapy (PCIT) is grounded in attachment theory and employs behavior analytic principles (Fleming, Kimonis, Datyner, & Comer, 2017). The focus remains on young children, aged two to seven, and, in contrast to EIBI, encourages parental involvement. PCIT promotes a live parent coaching model which is comprised of two phases (Vetter, 2018). The first phase is led by the child, and the parent uses positive reinforcement and praise, to establish a positive relationship with the child. The second phase is parent directed and involves modifying the environment and delivering immediate consequences (Fleming et al., 2017; Solomon et al., 2008). Parents are provided with behavioral strategies that address specific

behaviors of concern with their children with ASD (Vetter, 2018). Research on the effectiveness of PCIT suggests a significant reduction in the intensity of problem behaviors in the children as well as improvements in parenting skills was recorded (Fleming et al., 2017; Solomon et al., 2008; Wade et al., 2017). This study suggests that parents can be directly trained to implement behavioral principles which can result in a decrease in intensity of problem behaviors. The component of the parent being trained to implement daily behavioral strategies is recommended to be incorporated into the parent training program.

Positive Behavior Support

Positive behavior intervention and supports (PBIS) is another example of an evidence-based practice predicated upon the principles of ABA. This approach specializes in working with children with disabilities but is not limited to a specific age. Similar to PCIT, this intervention requires stakeholder participation which means that the parents take a critical role in their child's behavior management (Lee, Poston, & Poston, 2007). PBIS focuses not only on reducing the child's problem behaviors but in teaching them skills to replace the maladaptive behaviors. This method is commonly applied in a home setting and results in changes to the family routine, interactions, relationships, and integration into the community. Positive behavior intervention can be implemented in the home setting which permits the application of a culturally sensitive intervention and adheres to the family's lifestyle (Lee et al., 2007). In addition to teaching appropriate skills, PBIS emphasizes social validity and long-lasting outcomes over the life-span of the individual (McLean & Grey, 2012). The ultimate objective is to improve the quality of life for the entire family, thus impacting the physical and mental well-being of the family members (Lee et al., 2007; McLean & Grey, 2012). Positive behavior intervention and supports involves the parents in managing their own children's behaviors in the home environment. The research

highlights the level of parent engagement in their children's treatment and the potential positive effects it may have on the whole family's stress levels. The most important aspect of this model as related to parent training is the delivery of the intervention by the parents in the context of the home which permits generalization of skills to a variety of settings.

These three models founded on behavior analytic principles include important aspects to be incorporated into an online parent training program. Intensity of services, parent-led intervention, and a home setting are critical components to an effective online intervention. EIBI recommends forty hours of services per week which may be financially impossible and impractical for scheduling purposes for most families. However, if the parent is trained in ABA principles and taught to apply the strategies, there would be no limit to the hours of intervention the parent could provide. Additionally, strategies could be implemented not just at home, but in any setting where the parent is accompanying the child, thus promoting generalization of the parenting skills. The following section explores the role of the parent in applying behavioral strategies given their potential for close interaction and frequent opportunities for teachable moments with their child.

The Parent as Implementor of Behavioral Strategies

Providing parents with tools to implement basic behavioral strategies on their own will help overcome challenges experienced prior to accessing formal services. Furthermore, supplying parents with these strategies will help address barriers to care such as the scarcity of providers and limitations in specialized treatment for ASD, the financial burden on families to cover the cost of care, and bridge any cultural limitations due to language impediments. As discussed in Chapter 1, Bronfenbrenner’s ecological systems theory (1994) provides a framework in which to explore various variables and environments and how they affect the

individual with ASD located at the center of the model. The five major systems identified in this model, from the more external layers to the system nearest and most in contact with the individual, are the chronosystem, the macrosystem, the exosystem, the mesosystem, and the microsystem. The microsystem represents the child's immediate environment, and interactions take place in a "face to face setting" (Bronfenbrenner, 1994, p. 1645). This system may have the most direct impact on children with ASD and can include the parents, siblings, teacher, therapists, and peers. The critical interaction between caregiver and child, often the mother-child dyad, is at the heart of this innermost system. The research studies reviewed in this chapter demonstrate support for an intervention taking place in the microsystem with the involvement of parents.

As discussed earlier, ASD includes deficits in language, communication, socialization, and stereotypic or repetitive behaviors (Centers for Disease Control and Prevention, 2016). The inability of the child to communicate or socialize due to the limitations caused by their disorder also affects the behavior of the other person in the dyadic relationship, the primary caregiver as noted in microsystem of the EST model (Hudry et al., 2013). To address challenges in this relationship, parent training intervention has been indicated to improve parents' self-efficacy as well as the child's maladaptive behavior (Fleming et al., 2017). For the purposes of this review, online parent training is defined as parent training that is provided via an online, web-based tutorial. Parent training offers parents the knowledge to manage their children's behaviors which take place throughout the day and in a variety of settings and should not replace formal behavioral assessment and intervention from a certified/licensed professional. Self-efficacy is defined as the belief in one's ability to produce a desired outcome. Bandura (1982) describes self-efficacy as the belief in one's ability to complete a task. The increased self-confidence of a

parent to implement behavioral strategies when their children are presenting maladaptive behaviors may influence the likelihood of their effectiveness at applying these techniques. The importance of the quality of the interaction between parent and child as referenced in Bronfenbrenner's microsystem, highlights the role of the parent as an active participant and an essential component in their children's treatment program.

Parents are agents of change for their children, and empowered parents can effectively manage their children's behaviors resulting in better outcomes for them and educating and empowering parents by training them to deliver interventions results in reduced stress levels for parents and improved functioning of the children (Minjarez et al., 2012). Parents' well-being is closely associated with the child's well-being as well as their behaviors. The children's problem behaviors and emotional as well as physical condition affect the parents. To improve the well-being of all members of the family, underlying factors causing the issue must be addressed. In the case of children with ASD, problem behaviors stemming from their inability to effectively communicate and socialize may be addressed through parent training. Therefore, providing support to the parents utilizing parent training should provide parents with skills necessary to improve their handling of daily situations and behaviors that may arise and increase their self-efficacy as well as improve their child's behaviors (Tommeras, Kjobli, & Forgatch, 2018). When parents have a higher sense of self-efficacy, they feel more confident and more positive which may transfer into more effective parenting with their child (Cohen, 2013). The parents' coping mechanisms and outlook on the diagnosis of their child and their belief in self-efficacy are critical components in the emotional well-being of the family and the child with autism. The consequences of a healthy family relationship on an ASD child are essential to positive outcomes (Weiss et al., 2013).

Benefits of Training Parents in Behavioral Strategies

A parent training model involves the parent assuming a leadership role in treatment in which they role model behaviors and provide context for the child to learn social skills (Haven, Manangan, Sparrow, & Wilson, 2014). When parents are the central person for therapy or treatment delivery, it increases the likelihood that new skills are retained and generalized by the children as the parents can present more opportunities for practicing the skills or behaviors (Dogan et al., 2017; Meadan & Daczewitz, 2014; National Research Council, 2001). Although there are benefits to parents as treatment providers, a series of barriers may prevent a parent training intervention from reaching predicted successes. Poorly designed and executed parent training could result in no noticeable improvement in their children's acquisition of skills or reduction of maladaptive behaviors (Rivard et al., 2014). Parents cultural beliefs may influence their views on development regardless of training or educational materials thus rendering the training program useless (Blanche et al., 2015; Zuckerman et al., 2014). Ultimately, the success of the program relies on the parent's willingness and commitment to be consistently involved and motivated to engage with the child (Siller et al., 2012). According to the outcomes of a needs assessment described in Chapter 2, a majority of parents expressed interest in learning more about ABA and becoming more involved in their children's therapy. If parents are trained in their native language to personally implement strategies, they will gain knowledge about their children's disorder and strategies on how to manage behaviors that occur at home. Overall, the research supports the parents' role as implementors of behavioral strategies as a viable model in the reduction of challenging behaviors in children with ASD.

The following section reviews current approaches for training parents that involve technology and distance learning. Web-based tutorials and video modeling are briefly described

as well as the specific elements that could contribute and benefit the parent-mediated intervention proposed.

Online Format

Online, or distance, learning has become an increasingly popular method of delivering instruction as it provides an opportunity to reduce educational inequities that may exist due to geography, race, and budget constraints (Blaylock & Newman, 2005; Varner, 2009). The incorporation of technology is inevitable as it offers unfettered access to knowledge and supports interactive communication between the instructor and the learner. Blaylock and Newman (2005) report growth in the use of technology by lower-income families, rural populations, and racial or ethnic minorities. According to the US Department of Commerce (2016), 77% of Hispanics have an internet subscription, while although the lowest group when broken down by race and ethnicity, still reflects an increase from 66% two years ago in 2015. When internet use is broken down by income level, 58% of internet users report an annual income under $25K. A significant increase of 19% is indicated with 77% of people earning a yearly income of $50K using the internet (US Department of Commerce, 2016). This data suggests that online intervention is a viable option for Hispanic parents regardless of income or ethnicity.

An online intervention is a feasible alternative for parent training due to the comparatively high costs and the lengthy time commitment associated with in-person training (Meadan & Daczewitz, 2014). This online system may result in increased availability of health services for families in geographical areas with limited access to services (Hamad et al., 2010; Vismara, McCormick, Young, Nadham, & Monlux, 2013). Training could be conducted entirely via online lectures and video footage (Hamad et al., 2010). Although studies have found online training and services to be successful, other studies have determined that parents prefer the

option of face to face interaction with a therapist versus an entirely web-based experience (Pickard, Wainer, Bailey, & Ingersoll, 2016). Despite some participants' preference for an in-person session, web-based training was found to be equally effective in reducing challenging behaviors (Lindgren et al., 2016). An online training program would address the barriers of treatment for Hispanic families: lack of health care coverage and limited providers, and therefore is recommended to be included as part of a parent training intervention. Additionally, the costs associated with an online program would be less than an in-person program due to reduced expenses with travel and time. Therefore, even though there was a personal preference noted for personal contact, an online program could be equally effective and be provided at a reduced cost.

Web-based Tutorials

Web-based tutorials is self-paced training that offers a viable and effective alternative to a live, face to face interactive learning experience (Kabak, Stone, Ousely, & Swanson, 2011). Modules consist of written text, video examples, interactive exercises, or a combination of these and are available on a web-based platform and accessible to the learner at their convenience (Wainer, Pickard, & Ingersoll, 2017). The advantage of an entirely online learning experience is that it maximizes resources by imparting knowledge to a large group in a short period of time (Kenny, 2007). This approach may be advantageous for low-income families with limited access to treatment. Data reflects that low-income families have access to smartphones or technology as well as internet use. These families are comfortable using technology and seek information from the internet suggesting that a purely web-based parent intervention is a feasible alternative to an in-person training (McGoron, Hvizdos, Bocknek, Montgomery, & Ondersma, 2018). By offering self-paced web-based modules, parents would have access to knowledge instantly and at any time that is convenient for them. Furthermore, they could review the presentations and the

information they contain, as often as necessary to further their understanding of the behavioral strategies and how to implement them.

Video Modeling

Video modeling is a teaching strategy that uses a video recording as a visual model of specific steps for illustrating a particular skill. Although the effectiveness of this evidence-based practice has been mostly demonstrated in teaching children social skills, self-help skills, and academic skills (Besler & Kurt, 2016), studies using video models could also be applied to teaching others to implement behavioral strategies with their children effectively (Fleming et al., 2017; Flippin & Crais, 2011; Parsons, Rollyson, & Reid, 2012). Video modeling has also been used to train parents and caregivers, however there are a small number of studies evaluating its effectiveness as a parent training strategy (Bagaiolo et al., 2017; Spiegel, Kisamore, Vladescu, & Karsten, 2016). This novel approach could be applied in the home setting where parents could view the videos modeling appropriate social interaction or skills in the comfort of their home and then apply the strategies with their children in their natural environment. The video recording would replace live modeling by a provider or coach which requires less training of the parent and is also cost-effective (Bagaiolo et al., 2017). It is proposed that including video modeling as part of a training program for Hispanic families with children with ASD, would provide replace the need for a physical person to be present and demonstrate the skill. By viewing a video, the parents can observe the skill being and can then emulate and implement it appropriately. Additionally, it complements any oral or written instructions and reduces confusion.

In the following section, studies of three different models grounded in applied behavior analysis is reviewed in detail. Most of the studies incorporate an element of parent training but few include an online component.

Parent Training Research

The following section will review research studies that focus on training parents to positively interact with their children and teach them appropriate communication and socialization skills as well as how to manage problematic behaviors. All studies reviewed apply some variation of behavior analytic principles and, although some incorporate an element of technology in the delivery of training, there are no studies that provide training in an entirely online platform. Each study, which include one of the three models of EIBI, PCIT, and PBIS, will be briefly described and fundamental aspects of each will be selected for inclusion in the proposed online parent training intervention for Hispanic parents.

Research on the efficacy of EIBI has identified intervening with the child at the earliest possible moment and fidelity of implementation as the two most important predictors of success. Prior studies have focused on EIBI in clinics or homes but not in a community setting other than as a control group. The purpose of Rivard, Terroux, and Mercier's (2014) study was to examine the effectiveness of a publicly funded, less intense program of 16-20 hours per week offered in day care centers by comparing students whose parents received training prior to their children with ASD beginning the program to those whose parents did not receive coaching in advance.

This study was conducted in French in a rehabilitation center in Quebec, Canada. In the intervention group, 37 students with ASD and younger than 5 years of age were selected and their parents received 21 hours of pre-program coaching which included introducing ABA strategies that would assist them in dealing with problems at home such as feeding, eating and toilet training issues with their children. Parents then received one-hour, weekly follow up visits in their home over the course of a year. After one year of weekly parent training, the 37 children began receiving one-on-one ABA services from a trained therapist in the day care setting for 16-

20 hours per week. Goals focused on communication, social, and adaptive behaviors. The control group consisted of 56 students who received ABA in the daycare but whose parents did not participate in the training program. Outcomes were measured using Childhood Autism Rating Scale (CARS) to determine the severity of the symptoms, Wechsler Preschool and primary Scale of Intelligence (WPPSI-III) to measure intellectual functioning, as well as instruments to measure adaptive behaviors and socio-affective competencies. Analyses of variance (ANOVA) compared patients' symptoms, adaptive behaviors, and intelligence of the students before the intervention, after the parent training and after one year of ABA services. A second analysis was conducted comparing the students whose parents received parent training to the group that did not but only prior to starting ABA and then after completing the one year of services. The results show that children improved in adaptive behaviors, intellectual functioning and socio-affective competencies after twelve months of ABA in both the pre-program group and the control group (Rivard et al., 2014). However, there was no significant difference noted in the outcomes between the children whose parents received the parent training and those who did not. The authors attribute this to the low intensity of the intervention, one hour a week for one year. However, parents expressed satisfaction with the pre-program and noted that it made them "feel less isolated" (Rivard et al., 2014, p. 1040). Although the findings from this study may not support the efficacy of a pre-parent training for outcomes, it does suggest that parent training may reduce parental stress (Rivard et al., 2014). Based on this study, although the findings do not report clinical significance, the impact of parent training demonstrates practical significance of parents' perceived satisfaction and should be considered favorably.

There has been extensive research conducted on the effectiveness of EIBI and the positive outcomes for young children with ASD (Fava & Strauss, 2011; Grindle et al., 2009;

Leaf et al., 2016; Rivard et al., 2014). However, Grindle, Kovshoff, Hastings, & Remington (2009) sought to expand existing research to explore the influence of a home-based EIBI program. The purpose of this qualitative study was for parents to share their experiences with EIBI that focused on implementation in a home setting. and what their perception was of the advantages and disadvantages of the program. According to the authors, fifty-three parents of children with ASD, thirty-two mothers and twenty-one fathers, based in the UK were recruited for this study. No other demographic information was provided. The parents participating in the EIBI program were interviewed using a semi-structured format inquiring about parents' perceptions of EIBI, its impact on the family, and the level of parental participation in the program (Grindle et al., 2009). Interviews were conducted over the telephone and were taped. A content analysis procedure produced a list of themes which were then categorized and coded. The primary researcher conducted initial coding, and a second researcher coded a quarter of randomly selected transcripts to ensure inter-rater reliability which averaged 87% (Grindle et al., 2009). Results demonstrated that mothers and fathers both reported an improvement in their child's language and communication skills and about a third also noted an increase in play skills.

Most of the mothers commented that the home program resulted in them feeling supported with problem behaviors as well as daily activities like toilet training and feeding while only one-third of the fathers made note of this. Two-thirds of the parents mentioned increased free time for household chores and leisure activities and one-quarter identified an improved social life thanks to the EIBI home-based program. Seventy-five percent of the parents noted a significant benefit for siblings of the child with ASD (Grindle et al., 2009). However, some difficulties were experienced by the participants mostly associated with funding for the program and in the training and retention of the therapists proving services in the home. A few other

issues with the program included the loss of privacy due to the presence of the therapists in the home, the sibling feeling that they received less attention, and feeling that the child with ASD missed socialization opportunities since they were receiving services in the home. The study by Grindle et al., (2009) suggests the importance of involving the parents and providing support not only to the child on the spectrum but to the entire family. A limitation of Grindle et al.'s study (2009) points to the lack of attention to the family's emotional wellbeing and possible need for psychological services. Another limitation that affected parents' perceptions negatively was the parents' expectation that their children would achieve a "normal" level of functioning. The authors suggest this preconceived notion is due to the results of Lovaas' 1987 research study of EIBI in which 40 hours per week of EIBI resulted in almost half the children being indistinguishable from their typical peers. Although Grindle et al.'s (2009) study did not directly measure outcomes of the program, it measured parents' perceptions of the training which appeared to have an impact on the parents' self-perception to implement the strategies. These results suggest parents would positively benefit from a parent training that includes the opportunity for parents to practice and successfully implement behavioral strategies as EIBI programs tend to focus on the needs of the child and do not incorporate family members in the intervention.

PCIT supports a parent coaching intervention model for children aged 2 to 7 years old with ASD and behavioral problems. Parents are coached in how to modify the environment and focus on change though parent-child interaction. Most studies focus on younger children. One of the main barriers to treatment is access to qualified providers, particularly for those who are restricted by geography (Fleming et al., 2017). A case study by Fleming et al. (2017) sought to adapt the PCIT model to an online delivery format to reach families in rural areas and improve

parenting skills to reduce disruptive behaviors (Fleming et al., 2017). A five-year old boy from rural Australia presenting with severe emotional and behavioral problems was selected based on the distance of his home to the research facility. The parents completed several behavior inventory and assessments to establish a baseline of their child's behaviors. The first session was held in person at the research clinic while six subsequent sessions took place at the family home with coaching provided via tele video conferencing. While an overall improvement in the child's behavior was noted, there were spikes of physical aggression throughout the training. Additionally, technological difficulties caused interruptions, and, in some cases, videoconferencing was not possible, and training continued purely through audio. Training was exclusively performed with the mother as the father worked remotely. At the three-month follow-up, the mother reported behaviors were improved and maintained both at home and at school and that parent and child had a more positive relationship (Fleming et al., 2017). Based on this study, it is important that the online parent training count on the support and full involvement of the parents of the child with ASD.

The purpose of Solomon, Ono, Immer, and Goodlin-Jones' (2008) study was to explore the effectiveness of the implementation of PCIT to address behavioral problems of school aged children. The researchers hypothesized that PCIT would result in a reduction in the children's problem behaviors and improve their social and adaptive skills while decreasing parental stress. Nineteen children between the ages of five and twelve who had an ASD diagnosis participated in the study which used a waiting-list control group design (Solomon et al., 2008). The Eyberg Child Behavior Inventory and The Behavior Assessment System for Children Parent Rating Scales measured parents' perspectives of their child's problem behavior and The Parenting Stress Index asked parents to self-report their stress. Parent child interaction was measured in three 5-

minute sessions of free play in which two trained coders observed and coded for facial expression, body language, tone of voice, and social affect. These sessions were measured pre, mid, and post-intervention. The intervention consisted of two phases of six sessions each. The first phase was child directed and parents received feedback from the coach on how to respond and interact with their child. The second phase was parent directed and parents were taught to give simple instructions and consistently enforce compliance. Although results did not note a decrease in parental stress comparing pre and post-intervention scores, parents did rate their children's behavior as less problematic and adaptive behavior appeared improved after receiving the intervention (Solomon et al., 2008). However, the most significant outcome was the improved shared positive affect between parent and child as self-reported by the parent. Although significant outcomes for parental stress were not reported, the improvement in parent-child relationship may have important long-term influences on the child's continuing development and the parent's perception of their child's abilities and behaviors. Based on this study, it is important that the parents are willing and able to accept strategies shared with them and implement them effectively with their own children resulting in improved behaviors.

Positive behavioral support is frequently used to reduce challenging behaviors and teach skills that promote replacement behaviors. Improved emotional and mental well-being as well as quality of life for both the individual with ASD as well as family members, are important outcomes. Lee, Poston, & Poston (2007) sought to examine the experiences and perspectives of the participants on the implementation of PBS in a home setting with a 17-year-old participant with ASD. The mother implemented positive behavior strategies with the goal of increasing her son's self-management so that he could potentially live in independent housing. The participant exhibited problem behaviors, especially during evening routines. The intervention used a single

subject withdrawal design (ABAB). During the baseline trials, the participant was given the instruction to get ready for bed. If he did not respond, up to five verbal prompts would be provided. During the intervention phase, which consisted of seven sessions, the participant received an explanation of self-reinforcement and self-monitoring. He was asked to select a reinforcer, encouraged him to complete the target behavior, asked him to monitor his self-monitoring sheet, and access his pre-selected reinforcer. This intervention was implemented for eight sessions, withdrawn for two sessions in which there was no self-reinforcement or self-monitoring, and then reinstated for an additional four sessions to measure the effects of the treatment on the participant's self-management. Data was collected by recording the frequency of mom's verbal prompts, the participant's independent behaviors were scored on a Likert scale of 0 to 3, and inappropriate behaviors were recorded using time sampling with 10 second intervals. The results demonstrated an improvement in independently completing nighttime routines and a reduction in verbal prompts and aggressive behaviors. A follow-up, 18 months later, concluded that although the participant possessed the skills to perform the tasks in his evening routine, he was unwilling to do so as he lacked the motivation. Although, as a single subject case study this research project presents limitations in terms of generalizability, it highlights the importance of involving family members to achieve positive and long-lasting outcomes for the whole family (Lee et al., 2007). Based on this study, it is important that parent training intervention include numerous opportunities for the parent to implement the strategies in their natural setting and that the outcomes include goals for improvement in quality of life for the whole family.

Given the stress that children's behavioral problems can cause parents, it is important to provide parents with strategies to address disruptive behaviors. Russa, Matthews, and Owens-DeSchryver (2015) present a study to highlight several family centered approaches which meet

the families' needs and family members are active participants in the child's intervention. The authors identify two critical phases, initial diagnosis and transition into adulthood, when families of children with ASD are in most need of these supports. Two of the five names models are Positive Behavioral Interventions and Supports (PBIS) and Parent-educator collaboration. PBIS is one of the recommended models which provides parents with assistance in modifying the environment and creating contexts in the home and out in the community that promote children with ASD's desirable behaviors. The second model is the parent-educator partnership model in which parents and schools collaborate. Schools identify positive behavioral strategies that work with students in the school context and then work with parents to create goals and train parents in the implementation of evidence-based strategies. Parent involvement in treatment has demonstrated positive outcomes for the child with ASD (Russa et al., 2015). As such, involving the family in the intervention is an essential component and widely supported by research. Although this article highlights the importance of active family participants in the intervention, it does not specify how to accomplish this task. The glaring lack of detail on how to implement a successful family-based intervention suggests that although parent involvement has been identified as critical, each family presents with different needs and supports depending on their children's ages and level of functioning. Identifying an intervention that succeeds in training parents regardless of their needs, cultural factors, geography, and socioeconomic status presents quite a challenge. Based on this study it is important that a training program empower parents and encourage their participation in their children's management in the home setting.

Of the studies reviewing the effects of parent training programs incorporating behavior principles into the training program, those studies exploring EIBI do not incorporate any online elements. The parent training and implementation takes place face to face with the parents.

Professionals are responsible for implementing strategies directly with the child and any implementation of strategies by parents is not measured or monitored. Both articles reviewing PCIT highlight their success in training parents to implement behavioral strategies with their children. However, only one of the studies incorporated technology by providing coaching via live video conferencing. The PBIS studies do not incorporate any technology either although both emphasize the importance of encouraging parents to receive training and actively manage their children's behaviors. While it can be concluded by each of the studies that it is crucial to involve parents, it is also apparent that there is not sufficient research that explores incorporating technology in any of these models. It is hypothesized that an online parent training in Spanish for Hispanic families of children with ASD will result in reduced parent stress levels and increased knowledge of strategies to manage challenging behaviors.

Conclusion

Barriers for accessing treatment for ASD for Hispanic families include the under diagnosis of the disorder, a lack of health care coverage, the scarcity of providers, the financial burden to families, and cultural adaptation issues. ABA is highly regarded in the medical and research community and is supported by numerous studies extending over half a century. This behavioral approach to ASD is currently the only treatment authorized by medical insurance. Studies have identified parent participation as an essential component in treatment plans for children with ASD. Furthermore, research has linked active parental involvement to their children's behavioral gains suggesting the importance to increase opportunities for parent interaction in future treatments.

Families may have limited access to ABA as a treatment due to not receiving a diagnosis or not having health care coverage. With the growing presence of technology in everyday life, an

online delivery model would address these barriers by teaching parents to apply behavioral strategies with their children offers providing parents with the knowledge and skills to apply strategies themselves, thereby bypassing the need for a diagnosis and insurance benefits. By empowering parents to implement behavioral strategies, the scarcity of providers is no longer a concern, and the financial impact on families is lessened. Furthermore, by training parents in their native language, the issue of language and cultural barriers is diminished. Most importantly, when quality interaction takes place between the caregiver and child, the outcomes are improved parental self-efficacy and improved positive behaviors in the children with ASD suggesting that a quality parent training program would be beneficial for parents and the child with ASD.

Chapter 4: Intervention Methodology

Chapter Overview

Parent training in behavioral strategies may present a solution to addressing the barriers that affect the limited access to effective treatment of Hispanic children with ASD. An online, self-paced class employing evidence-based behavioral strategies is a viable method to increase access to effective strategies, encourage parent involvement in those strategies, reduce the financial impact on families associated with treatment, and eliminate other barriers that prevent children with ASD from receiving treatment such as the under diagnosis of ASD, the scarcity of providers, the financial impact, and the language and cultural adaptations. The proposed intervention will consist of six 30-minute online modules, consisting of short videos approximately seven to nine minutes in length each, that teach Hispanic parents of children with ASD behavioral principle or strategy. The following chapter presents the purpose for the study, the research design, and procedures to be implemented for the proposed intervention, data collection, and data analysis.

Purpose of the Study

While parent training with an emphasis on ABA principles and strategies has been previously researched (Fleming et al., 2017; Grindle et al., 2009; Lee et al., 2007; Rivard et al., 2014; Russa et al., 2015; Solomon et al., 2008), few studies have explored the effectiveness of parent training using an online delivery method specifically addressing the barriers to treatment for Hispanic families. The purpose of the proposed intervention is to evaluate the effectiveness of an online delivery method for training Hispanic parents of children with ASD, using both quantitative and qualitative data, to improve parental knowledge of ABA to address challenging behaviors and thereby decrease parental stress.

Research Questions

To investigate the effectiveness of an online parent training program presented in Spanish on the stress levels of Hispanic parents of children with ASD, the following research questions will be addressed in the proposed study:

Outcome evaluation research questions:

1. To what extent does an online parent training intervention increase parents' knowledge of ABA principles and strategies?
2. To what extent does an online parent training intervention have an impact on parents' stress levels?

Process evaluation research questions:

1. To what extent were participants able to access the content on the hosting site each week?
2. What were parent perceptions regarding satisfaction with the parent training?

Research Design

An online parent training program for Hispanic parents of children with ASD would be best evaluated using mixed method design, specifically a convergent parallel design, that combines quantitative and qualitative data, allowing for more comprehensive data collection and an in-depth analytic process (Creswell & Plano Clark, 2018). In a convergent parallel design, both quantitative and qualitative data strands are predetermined and executed as conceptualized. Although each strand receives equal priority and data collection occurs concurrently, the records and analysis of each strand are kept separately, independent and parallel of each other, until they are merged for interpretation at the conclusion (Appendix C) (Creswell & Plano Clark, 2018). A convergent parallel design is one of the most popular options as it is reasonably easy for a new researcher to implement and well-suited for a single researcher to conduct, gather, and analyze

data (Creswell & Plano Clark, 2018). Despite data collection from both quantitative and qualitative strands taking place during the same phase, data from each strand is analyzed independently allowing the researcher to focus on techniques specifically employed for each approach (Creswell & Plano Clark, 2018). By analyzing each strand individually, the researcher can identify the strengths and deficits in one area and confirm that the other strand can corroborate, thereby strengthening the findings.

Outcome Evaluation

Increased knowledge of ABA principles, confidence in the ability to implement behavioral strategies, and reduced stress levels are proximal outcomes identified in the logic model (Appendix B). Participants completed pretests and posttests on a weekly basis which consisted of quantitative questions to measure the changes in their responses from pre-training to post-training to evaluate the effectiveness of the online parent training program. Each weekly module introduced a strategy for parents to implement with their own children and a quantitative question about parent's confidence related to using the strategy were included in each weekly posttest. Parents' stress levels were measured using the Autism Parent Stress Index to compare self-reported stress levels prior to commencing the parent training and then again at the conclusion of the six-week program. Each of the outcomes are reflected in the proximal outcomes of the Logic model in Appendix B.

The outcome question measuring parents' knowledge of ABA employed quantitative data to calculate the increase in familiarity with the principles and strategies presented in the training program and was tested prior to and at the conclusion of each weekly presentation. The outcome question comparing levels of stress of parents before and after completing the intervention collected responses from a Likert scale survey. Data was collected prior to beginning the training

and again upon completion of all six modules.

Process Evaluation

Project implementation involves planning, executing, and delivering an intervention the way it was originally designed. Therefore, project implementation evaluates the fidelity with which the program is delivered, and informed improvement based on feedback received during the implementation stage. Feedback from the participants obtained through both quantitative and qualitative means provided first-hand perspectives regarding the delivery of the program, the content delivered, and their experiences. In future iterations of a revised training program, participants' voices will be fundamental to guiding modifications. Context, a component of ease of implementation, is of particular relevance to the online parent training.

In the process evaluation, context is defined as those features of the environment that are necessary for the program to be implemented as designed (Baranowski & Stables, 2000). In the online parent training, context was defined as the platform that hosts the content. The context for this project was especially relevant as the intervention aims to provide an exclusively online parent training program. Should participants encounter difficulty accessing the training programs due to limitations with the internet, problems with personal devices, or the hosting site, can significantly impact the effectiveness of the intervention. All participants should have unfettered access to the training programs during a six-week period. Data were collected directly from the participants after each of the six modules via the Online Access Survey (Appendix O) at the end of each weekly sessions regarding the participants' ease of access to the platform hosting site, internet access, and ability to use their device to access the content on the site.

The second process evaluation question explored parent satisfaction levels with the completed training by means of quantitative and qualitative data. Data were collected in the

Parent Training Satisfaction Survey (Appendix P) by asking participants to rank their level of satisfaction with the material by means of a Likert scale. Three additional open-ended questions collected qualitative data and asked parents to provide details as to what they found particularly useful or satisfying, what areas needed improvement, and what additional material would they have liked included. Data were collected at the conclusion of the six-week training program. Additionally, respondents were asked to volunteer for a Post-Intervention Semi-Structured Interview (Appendix Q) conducted at the conclusion of the six-week training program. If the participants accepted, they were contacted via telephone and asked five open-ended questions regarding their experience with the training program.

Method

The parent training employed a curriculum specifically developed by the researcher for the purpose of this study that followed a series of steps to build mastery in the understanding and application of behavioral strategies. The focus was on teaching Hispanic parents' skills to reduce their children's challenging behaviors. Video vignettes created exclusively for this parent training by the primary researcher modeled the appropriate strategies for the parents. Written vignettes depicting scenarios were also presented along with opportunities for participants to confirm comprehension of the skills. This section describes the participants, the procedures for intervention implementation, instrumentation, and data collection.

Participants

Participants included Hispanic parents of a child with an ASD diagnosis whose primary language included Spanish. These families were volunteers who responded to a search for interested participants via the University of Miami's Center for Autism and Related Disabilities bi-monthly e-newsletter sent out to families in Miami-Dade County and Facebook or other social

media sites targeting Spanish speakers and parents of children with ASD. The proposed sample size was 27 parents. The rationale was based on a simple G*power analysis which provided an effect size calculator to determine the ideal sample size (Universität Düsseldorf, 2019). The first step required identifying the statistical test of choice which was a t-test between two dependent groups, the pre and posttest results. An a priori power analysis determined the sample size as a function of the required power level of .80, the pre-specified significance level, alpha .05, and the population effect size of .50. A one-tailed test was selected as the hypothesis predicts the direction of the relationship between factors: that the parent training would decrease parent stress and that parent training would increase parent knowledge of ABA strategies and principles. The G*Power Analysis calculator determined that 27 was the required sample size to demonstrate with 80% chance that there was a difference of 5 between the pretest and posttest results. Thus, 27 was the suggested number of Hispanic parent participants for the online parent training.

Measures and Data Sources

Prior to beginning the intervention, the participants completed the Demographic Questionnaire that contained Likert-type scale and a combination of multiple choice and open-ended questions (Appendix F). This demographic questionnaire provided information about the Hispanic parents participating in the training and offered context when analyzing the responses to the process and outcome instruments completed throughout the six-week program. The demographic questionnaire and all additional measures were included in the Appendices in both English and Spanish versions. However, only the Spanish version was presented to the participants. The English versions were available exclusively for the committee to review.

The outcome evaluation questions focused primarily on measuring proximal outcomes such as increased knowledge of ABA and reduced stress levels of the parents. Data for the short-

term outcomes of parents' knowledge of ABA was collected directly from the participants, before initiating each module, and then again upon completion of each module. Data measuring for stress levels was repeated at the end of the six-week intervention. Participants' voice was a critical component as the participants are the primary stakeholders' who drive, and effect change and stand to benefit the most from an effective intervention.

Process evaluation questions and the logic model helped identify the data that needed to be collected thereby guiding the development of instruments and the logic model outputs. Social validity was measured on an ongoing basis throughout the six-week program considering feedback from participants who completed the posttest surveys including a question regarding their experience and feelings of satisfaction with the program. A final Parent Training Satisfaction Survey (Appendix P) was administered upon completing the six-week intervention. This survey combined quantitative and qualitative data which allowed a more comprehensive and holistic approach to analyzing data and informing effective change. Additionally, a voluntary Post-Intervention Semi-Structured Interview (Appendix Q) took place over the phone at the conclusion of the six-week program to gather qualitative data regarding the training program. The process evaluation research questions measured context, defined as the ease with which participants are able to access the hosting site and the content, and satisfaction with the training program as self-reported by the parents.

Outcome evaluation instruments. Three instruments were used to measure outcome evaluation questions: Pre and Post-Knowledge Tests and Pre and Posttest Surveys measuring knowledge of behavioral principles and strategies and the Autism Parenting Stress Index (APSI).

Pre and Post-Knowledge Test. Prior to beginning the first module of the parent training and again at the end of the sixth module, participants responded to six questions. These questions

asked participants general knowledge questions about ASD, ABA, and when to apply strategies and how to implement techniques.

Pre and Posttest Surveys. Prior to beginning each of the weekly parent training modules, participants completed a pretest consisting of five questions (Appendices L-O). These questions measured parents' existing knowledge of the ABA strategies to be presented that week such as positive reinforcement, the three-step prompt procedure, or sleep disturbances and how to address them. The responses to the five multiple choice questions in each pretest were collected for quantitative data collection. At the end of each of the weekly presentations, participants were asked to complete a posttest (Appendices L-O) to measure the same five questions from the pretest. Additionally, the posttest included one Likert style question to measure parents' comfort level in understanding the concept presented or in applying the strategies with their children. The results from the posttest were compared to the pretest to determine if learning took place during each weekly session.

Autism Parenting Stress Index. The Autism Parenting Stress Index, a 13-item questionnaire (Appendix G), was administered pre-intervention and then again after the six-week training program to gain insight as to how parent's perception of their stress levels may have altered as a result of the intervention. Silva and Schalock (2012) designed a scale to identify areas in which parents with children with ASD needed support and were at higher risk for parental stress. The APSI was developed over a period of five years and the question selection consisted of reviewing over 100 interviews of parents with children with ASD, inquiring about areas of daily life and their children's functioning that caused stress. Silva and Schalock (2012) conducted a validation study with 274 children with ASD comparing responses from three different parent groups: parents with children with ASD, parents with children with

developmental delays, and parents with neurotypical children. APSI demonstrated reliability in measuring parent stress levels when compared to three others commonly used but non-named instruments (Silva & Schalock, 2012). A limitation of this study was that it was used in Oregon with a sample representing limited demographic characteristics.

This scale was unique in that it was customized to the symptoms of children with ASD which makes it relevant to the proposed parent training intervention for Hispanic parents of children with ASD. The questions included in the APSI highlight the most challenging behaviors and typical symptoms associated with ASD. Parents of children with ASD reported levels of stress twice as high as those parents with children with other developmental disabilities and four times the greater than the stress levels of parents with typical children (Silva & Schalock, 2012). The parent training focused on the strategies introduced each week addressing how to manage these behaviors and symptoms such as using positive reinforcement and extinction or reviewing concerns with toilet training and food selectivity.

Process evaluation instrument. To evaluate the implementation of the intervention, three instruments were used. The first instrument, the Online Access Survey (Appendix O), specifically measured the ease with which participants are able to access the hosting site and the online content each week. The second instrument measured parents' levels of satisfaction with the training program via the Parent Training Satisfaction Survey (Appendix P), collected only one time at the conclusion of the parent training. The final instrument was the Post-Intervention semi-structured interview which was optional and in which willing participants responded to open-ended questions regarding their experience and perception of the six-week parent training program.

Online Access Survey. After each online module, the participants were asked to complete a survey that measured the ease with which participants were able to log on to the hosting site and access the modules. The survey was completed six times by each participant after each module for the full six weeks of the training program inquiring as to their experiences. Three quantitative questions using a Likert scale, two multiple choice questions, and one open-ended question evaluated the ease with which participants were able to log onto the website, access the modules once they were on the host site, and view the modules in their entirety (Appendix O).

Parent Training Satisfaction Survey. This survey was presented at the conclusion of the six-week training program. Parent satisfaction can be explicitly measured by asking participants to self-report the relevance of the content, if it was applicable to their daily life, and their overall level of satisfaction with the content of the training programs (Appendix P). Listening to participants' voice in providing data for this component was critical as participants are the key stakeholders and should be involved in driving change. The Parent Training Satisfaction Survey was used to ask participants to rate their satisfaction with the training program by answering five questions using a Likert scale (Appendix P). Participants were asked to rate if they would recommend the program, if the program was what they had expected, if they felt the information learned was new to them and useful, and if they felt confident in their ability to apply the learned strategies. Two additional questions asked parents to provide details as to what they found particularly useful in the training program or what needed improvement. A final open-ended question asked participants to share what they would have liked to see incorporated into the training program. This survey provided the most insight as to how to improve the quality of the program for future participants.

Post-Intervention Semi-Structured Interview. The Post-Intervention Semi-Structured Interview (Appendix Q) was conducted via telephone at the conclusion of the six-week program with those respondents who agreed to participate in this final step. Participants were asked five general questions that included each participant's general impression of the parent training (length of modules, length of total training, quality of presentations, usefulness of downloadable materials); content that was relevant/helpful to each participant's current setting; content that was irrelevant/unhelpful; recommendations of content for future training; and total level of satisfaction with the training program. The interviews were conducted in Spanish, presumably the language with which the participant was most comfortable. The interviews were not recorded.

Table 4

Summary of Constructs and When Instruments Were Implemented

Construct	Pre-Intervention	During Intervention	Post-Intervention
Demographics	Demographic Questionnaire		
Context		Online Access Survey (after each weekly presentation)	
Parents' Knowledge of ABA	Pre-Knowledge Test	Pre and Posttest Surveys (before and after each weekly presentation)	Post-Knowledge Test
Stress Levels	Autism Parenting Stress Index (prior to beginning the training)		Autism Parenting Stress Index (at the conclusion of the six week program)
Parent Satisfaction			Parent Training Satisfaction Survey
			Post-Intervention Semi-Structured Interview

Procedure

This section includes information on how participants were recruited, how data was collected, coded, and analyzed using a mixed methods convergent parallel design.

Participant Recruitment

Participants were recruited through the University of Miami's Center for Autism and Related Disability's (UM-CARD) e-mail newsletter which was distributed bi-monthly to registered members in South Florida. The email newsletter contained a flyer with the research

description and asked interested families to contact the primary investigator (PI) researcher directly via phone or email. Additionally, the flyer was posted on several Facebook and social media sites targeting Spanish speakers and parents of children with ASD such as UCF- Centro de Autismo y Discapacidades Relacionadas, ASD Informal Support Group Miami, and TEA among others. Once parents reached out to the PI, they were asked a series of questions over the phone or via e-mail (Appendix D) that screened for inclusion and exclusion criteria. Participants inclusion criteria included self-reported Hispanic heritage, would be comfortable receiving parent training in Spanish, and a child with an ASD diagnosis. Additionally, the family must have access to the internet and an electronic device by which they can view the training courses. Exclusion criteria included: 1) the family was not of Hispanic origin; 2) the child had a diagnosis other than ASD; 3) parents for whom Spanish was not a primary or native language and would therefore not benefit from a training course in Spanish; and; 4) the family had limited or lack of access to technology and devices. If they met the requirements to participate, a consent form (Appendix E) was sent via email for their signature confirming they were voluntarily participating in the study and allowing them to terminate their participation at any time with no penalty. Participants should not have a prior relationship with the PI thus eliminating any possible influence or coercion on a personal level. No tangible rewards or bonuses were offered to participants.

Intervention

The proposed parent training was provided in a short time, six weeks, with a strategy or problem behavior presented in each session. Each module, was approximately 30 minutes in length and presented in three video presentations, accessed from a pre-designated website. Each intervention module followed a format in which with each new concept introduced,

downloadable supporting materials was provided along with videos of how the parents should intervene when confronted with disruptive behavior. The downloadable supporting materials were in pdf format and included written descriptions of each principle or strategy reviewed. Opportunities for active responses from the participants were displayed throughout the presentation and confirmed comprehension. Over six weeks, the strategies presented included general concepts as well as applications of these techniques in specific situations. The content for these sessions included video vignettes created and developed by the primary researcher for the exclusive purpose of the Spanish online parent training as well as videos from YouTube presented to illustrate specific behaviors or concepts. The sessions contained content as noted in the following sections.

Table 5

Scope and Sequence of the Six Modules of the Online Parent Training

Module	Concepts	Objectives
1	ASD Diagnosis, Interventions, and Applied Behavior Analysis	The participant is expected to: 1) Discriminate between evidence-based practice and fad interventions. 2) Understand what the initials ABA stand for. 3) Operationally define a behavior 4) Identify the antecedents of a behavior
2	Functions of Behavior	The participant is expected to: 1) Identify the 4 functions of behavior. 2) Complete an ABC sheet for data collection. 3) Select the appropriate function when presented with scenarios.
3	Consequences	The participant is expected to: 1) Define positive reinforcement. 2) Difference between positive reinforcement and bribery 3) How to assess reinforcers 4) Understand that an undesirable behavior can be positively reinforced

Module	Concepts	Objectives
4	Prompts	The participant is expected to: 1) Identify at least 3 prompts that can promote compliance 2) Select the appropriate prompt and how to fade it away 3) Describe the three-step prompt procedure
5	Prevention Strategies	The participant is expected to: 1) Identify 4 types of setting events and how they affect behavior 2) Identify 8 preventive strategies and how to apply them 3) Describe how to use behavioral momentum to increase compliance
6	Problem Behaviors	The participant is expected to: 1) Identify strategies to promote toilet readiness skills 2) Identify strategies to promote better sleeping habits 3) Describe methods to improve eating habits

Pre-Module. Participants selected via the initial screening process and who have consented to participate completed the demographic questionnaire (Appendix F), the pre knowledge test (Appendix H) and the APSI (Appendix G). All surveys were filled out online directly on the hosting platform and took approximately 20 minutes to complete.

Module 1- ABA Core Principles. Upon completing the pre-module requirements, participants were directed to take a pretest on Module 1 (Appendix I). The 5-question pretest was followed by three video presentations totaling 21 minutes that introduced ABA and its applications for individuals with ASD. This presentation also identified components of evidence-based practice as opposed to pseudo-science or current fad treatments. Objectives of this presentation included: identifying core components of an ASD diagnosis; discriminating between evidence-based practice and fad interventions; understanding what the initials ABA stand for; operationally defining a behavior and; identifying antecedents of a behavior. The presentation included at least five active student responses (ASRs) on the objectives mentioned. Following

the presentation, participants were prompted to complete the posttest which includes the same five questions from the pretest and an additional question asking parents to rank their ability to apply the concept learned with their own child. The online access survey consisted of four Likert scale questions and two open-ended questions regarding parents' experiences with accessing content online. These questions took approximately 7-10 minutes to complete.

Module 2- Functions of Behavior. Upon logging into the site, participants were directed to take a pretest on Module 2 (Appendix J). The 5-question test were followed by three video presentations totaling 22 minutes that discussed the four functions of behavior. Objectives of this presentation included identifying the four functions of behavior; operationally defining a behavior; completing an ABC sheet for data collection; defining motivating operations, and; selecting the appropriate function when presented with scenarios. The presentation included at least five active student responses (ASRs) on the objectives mentioned. Following the presentation, participants were prompted to complete the posttest which included the same five questions from the pretest and an additional question asking parents to rank their ability to apply the concept learned with their own child. The online access survey consisted of four Likert scale questions and two open-ended questions regarding parents' experiences with accessing content online. These questions took approximately 7-10 minutes to complete.

Module 3- Consequences Upon logging into the site, participants were directed to take a pretest on Module 3 (Appendix K). The 5-question test was followed by three video presentations totaling 26 minutes that discussed the importance of positive reinforcement. Videos were presented demonstrating common incorrect delivery of reinforcement as well as videos of the desired means of delivery. Objectives of this presentation included defining positive reinforcement; understanding when positive reinforcement is most effective, and; explaining

how positive reinforcement can be incorrectly applied. The presentation included at least five active student responses (ASRs) on the objectives mentioned. Following the presentation, participants were prompted to complete the posttest which included the same five questions from the pretest and an additional question asking parents to rank their ability to apply the concept learned with their own child. The online access survey consisted of four Likert scale questions and two open-ended questions regarding parents' experiences with accessing content online. These questions took approximately 7-10 minutes to complete.

Module 4- Prompts. Upon logging into the site for the fourth week, participants were directed to take a pretest on Module 4 (Appendix L). The 5-question test was followed by three video presentations totaling 20 minutes that reviewed the concept of prompting and fading, including the three-step-prompt. Videos were presented demonstrating correct application of prompting in various situations. Objectives of this presentation included: identifying three different prompts that can be presented to increase the probability of completing a task; selecting the appropriate prompts to apply given a variety of situations, and; describing the three-step-prompt procedure. The presentation included at least five active student responses (ASRs) on the objectives mentioned. Following the presentation, participants were prompted to complete the posttest which included the same five questions from the pretest and an additional question asking parents to rank their ability to apply the concept learned with their own child. The online access survey consisted of four Likert scale questions and two open-ended questions regarding parents' experiences with accessing content online. These questions took approximately 7-10 minutes to complete.

Module 5- Prevention Strategies. Upon logging into the site, participants were directed to take a pretest on Module 5 (Appendix M). The 5-question test was followed by three video

presentations totaling 23 minutes that demonstrated prevention strategies that can be applied in everyday situations. Objectives of this presentation included: identifying four types of setting events and how they may affect behavior: identifying eight preventive strategies and how to apply them, and; explaining how behavioral momentum can aid a child in complying with a task. The presentation included at least five active student responses (ASRs) on the objectives mentioned. Following the presentation, participants were prompted to complete the posttest which included the same five questions from the pretest and an additional question asking parents to rank their ability to apply the concept learned with their own child. The online access survey consisted of four Likert scale questions and two open-ended questions regarding parents' experiences with accessing content online. These questions took approximately 7-10 minutes to complete.

Module 6- Common Problem Behaviors. Upon logging into the site, participants were directed to take a pretest on Module 6 (Appendix N). The 5-question test was followed by three video presentations totaling 25-minute video presentation that discussed the most common behavioral concerns in toilet training, selective eating, and sleep disturbances. Objectives of this presentation included: identifying toilet readiness skills and describing methods to increase successful elimination in the toilet; identifying strategies to address sleep disturbances, and; understanding the variety of eating issues that commonly affect a child with ASD and how to address them. The presentation included at least five active student responses (ASRs) on the objectives mentioned. Following the presentation, participants were prompted to complete the posttest which included the same five questions from the pretest and an additional question asking parents to rank their ability to apply the concept learned with their own child. The online access survey consisted of four Likert scale questions and two open-ended questions regarding

parents' experiences with accessing content online. These questions took approximately 7-10 minutes to complete.

Post-Session. The APSI survey was re-administered at the completion of the intervention. A final Parent Training Satisfaction Survey measured the parents' satisfaction based on their expectation and experience with the training program. Both surveys took about 15 minutes to complete. The optional Post-Intervention Semi-Structured Interview took place over the phone. The length of the interview varied but was not expected to exceed 20 minutes.

Data Collection

Both quantitative and qualitative data received equal priority and data collection occurred concurrently. However, the records and analysis of each strand were kept separately, independent of each other, until they were merged for interpretation at the conclusion (Appendix C; Creswell & Plano Clark, 2018). A variant in the convergent parallel design supported the use of surveys that combined both quantitative and qualitative questions. This data-validation variant supported the search for quantitative evidence as well as qualitative exploratory data to corroborate or refute the findings (Creswell & Plano Clark, 2018). Data was collected via online surveys and stored in a google drive.

Outcome evaluation data. Outcomes were used to assess the impact of the intervention. Pre and posttest scores prior to and after each module were used to evaluate the parents' knowledge of ABA principles and strategies. The pre and posttests of knowledge of ABA principles and strategies measured participants' knowledge prior to completing the module and any changes in knowledge following completion of each module. The Autism Parent Stress Index was completed prior to the implementation of the six-week intervention to measure

parents' stress levels and was administered after the completion of the intervention to measure if any change in stress levels were a result of the intervention.

Process evaluation data. To evaluate social validity, data was collected from participant surveys. In order to access the training program, participants were required to log on to the hosting site with a personalized userid and password. At the end of each session, the participants completed a short survey which measured their self-reported access to the hosting site and the content of the presentations. A final survey measuring social validity measured Hispanic parents' satisfaction with the completed six-week parent training. Upon completing the six-week training program, the researcher reached out to those participants who expressed interest, via telephone, for the optional Post-Intervention Semi-Structured Interview (Appendix Q).

Data Management

The demographic questionnaire, online access survey, Autism Parenting Stress Index, Parent Training Satisfaction Survey, and pre and posttest knowledge tests were administered through Thinkific. Each participant created their own user ID and password which, while protecting their confidentiality, allowed answers to be appropriately assigned to each respondent. The data collected was stored in Google Drive. The account was part of the G suite membership which ensured HIPAA compliance by encrypting data and securing confidential information by requiring password protected access to the account. The Post-Intervention Semi-Structured Interviews took place over the phone. Qualitative data collected during the interview was input into Google Drive.

Data Analysis

The outcome questions compared pre-intervention and post-intervention results to measure the knowledge of principles and strategies presented in the training program and

compared the levels of parental stress. The process evaluation questions focused on measuring the ease of implementation throughout the delivery of the training program to ensure that the intervention was executed as conceptualized and designed and social validity to verify parent satisfaction with the intervention. The results from both quantitative and qualitative strands should complement each other, thereby validating the results and strengthening the conclusion. However, for a mixed method design to truly render meaningful and credible information, the findings from the different strands must be appropriately integrated (Creswell & Plano Clark, 2018). This section identifies the statistical tests and coding methods that were employed.

Quantitative. Descriptive methods such as mean and mode were used to analyze attendance records and the quantitative responses on the surveys regarding ease of access to content and levels of parental satisfaction with the training program. Demographic data was also analyzed using descriptive methods to measure specifics about participants such as their age, gender, and annual income. For the comparison of pre-intervention and post-intervention results, a dependent t-test was performed.

Qualitative. Thematic analysis was used to analyze the qualitative open-ended questions from the Post-Intervention Semi-Structured Interview (Appendix Q). The initial phase of analysis commenced with a review of the open-ended answers employing conventional content analysis (Hsieh & Shannon, 2005). During the first coding cycle, a priori codes were assigned for the construct of parent's knowledge of ABA and parental stress levels due to the pre-session surveys. However, during the descriptive coding process, more codes were identified in addition to the initial codes using in vivo coding (Miles, Huberman, & Saldana, 2013). Once evidence was identified and codes assigned, the codes were examined again for patterns during a second cycle from which themes were then derived (Hsieh & Shannon, 2005). Dominant themes that

emerged helped categorize parents' experiences with the training program. Qualitative data was entered into NVIVO for coding analysis.

Mixed Methods. Once the data had been analyzed individually for quantitative and qualitative results, the findings were integrated for a mixed methods analysis. The qualitative data, open ended questions in the Post-Intervention Semi-Structured Interview, were uploaded into NVivo for coding. The codes were organized into themes and then transformed into a quantitative format to allow for data integration and comparison. Transforming data so that the same concepts are addressed and interpreting the findings of the merged data served to strengthen and corroborate the findings from each individual strand.

Summary Matrices. The matrices provide a visual display of the alignment between evaluation questions, indicators and constructs, data source(s), data collection tools, frequency of data collection, and methods of data analysis. The matrices provide snapshots of the process and outcome evaluations as related to the research questions (Table 6; Table 7).

Table 6

Process Evaluation Summary Matrix: Social Validity and Context

RQ1: To what extent were participants able to access the content on the hosting site each week?

RQ2: What were parent perceptions regarding satisfaction with the parent training?

		Data Collection		
Variable	Instrumentation	Source(s)	Frequency	Data Analysis
Parent Satisfaction	Parent Training Satisfaction Survey	Participants	At the end of each weekly module	Descriptive Statistics
Parent Satisfaction	Post-Intervention Semi-Structured Interview	Participants	At the end of the six-week intervention	Thematic Coding
Context	Online Access Survey	Participants	At the end of each weekly module	Descriptive Statistics

Table 7

Outcome Evaluation Summary Matrix: Parent Knowledge and Stress Levels

RQ1: To what extent does an online parent training intervention increase parents' knowledge of ABA principles and strategies?

RQ2: To what extent does an online parent training intervention have an impact on parents' stress levels?

		Data Collection		
Variable	Instrumentation	Source(s)	Frequency	Data Analysis
Knowledge of ABA principles and strategies	Knowledge of ABA Principles and Strategies Pre and Posttest	Participants	At the beginning and end of each weekly module	Descriptive Statistics; Inferential Statistics
Parent stress levels	Autism Parenting Stress Index	Participants	At the beginning and end of the intervention	Descriptive Statistics

Chapter Five: Findings and Discussion

Chapter Overview

The purpose of this study was to evaluate the efficacy of an online parent training to improve parent's knowledge and behavior management strategies founded on ABA principles. Furthermore, the study explored the impact of the parent training on parent stress levels related to parenting a child with ASD. Chapter 5 provides a summary of process of implementation, findings, and discussion of the results. This chapter aims to provide all results followed by extensive discussion framed by the research questions. Finally, the chapter concludes with a review of limitations and potential implications for practice and future research.

Process of Implementation

Process of implementation included the planning, execution, and delivery of the parent training as originally designed. During the weeks leading up to, and throughout, the parent training, modifications were made regarding recruitment and delivery. Initially, the study's recruitment flyer was e-mailed exclusively to families registered at UM-CARD through the center's weekly distributed e-newsletter. After six weeks, only six people signed up and began the online parent training. The researcher amended the IRB to post the recruitment flyer to social media sites on Facebook specifically targeted to families in Florida, South Florida, and Miami with children on the autism spectrum and sites in Spanish appearing to support families affected by ASD. An additional impact on recruitment/enrollment was the coronavirus global pandemic that resulted in a closure of Florida schools and businesses in mid-March 2020. One respondent specifically informed the researcher they would be unable to complete the parent training due to the pandemic. To address this issue, the original time frame of three months to complete the parent training was extended an additional two months (February 3rd to July 6th) to provide

opportunities for additional participants to enroll and complete the six-week parent training.

Findings

Demographic Findings

Forty-one people consented to participate in the online parent training, and thirty-eight created user accounts on the parent training platform. A total of sixteen people (N=16) completed the parent training (Table 8). The majority of respondents were mothers (N=13), and three were fathers. Twelve participants identified as Hispanic, three people identified as white non-Hispanic, and one participant selected "other." Most of the participants were married (N=12), two were divorced (N=2), and two were single (N=2). The participants represented a range of educational levels: one did not finish high school, high school diplomas (N=3), associate degrees (N=4), bachelor's degrees (N=4), and graduate degrees (N=4). Annual income also varied with four respondents reporting earning less than $20,000, seven earning between $20,000 and $34,999, one between $35,000 and $49,999, two between $50,000 and $64,999, and two earning more than $95,000. The majority of the participants noted their child with ASD was between the ages of 3 and 7 (N=13), and gender was identified as female (N=4) and male (N=12). Almost half were an only child (N=7), while the remaining participants had two or three siblings (N=9). The majority of respondents indicated their child was diagnosed before or at the age of three (N=14), with the exception of two who indicated a diagnosis at the age of four (N=1) or six or older (N=1; Table 8). Finally, twelve participants responded, "very satisfied" with the relationship with their child, three responded "somewhat satisfied," and one participant responded "dissatisfied".

Table 8

Participants' Demographic Characteristics

Variables	Levels	N	%
Role	Mother	13	81
	Father	3	19
Age of Child	1-2	1	6
	3-4	6	38
	5-7	7	44
	8-12	1	6
	19	1	6
Age at Diagnosis	Less than 1 year	3	19
	2	7	44
	3	4	25
	4	1	6
	6 or older	1	6
Sex of Child	Male	12	75
	Female	4	25
Other Children	Yes (2 or 3)	9	56
	No	7	44
	Married	12	75
Ethnicity	Hispanic	12	75
	White, non-Hispanic	3	19
	Other	1	6
Marital Status	Married	12	75
	Divorced	2	13
	Never married	2	13
Education Level	Did not finish high school	1	6
	High school degree	3	19

Variables	Levels	N	%
	AA degree	4	25
	Bachelor's degree	4	25
	Graduate degree	4	25
Income	Less than $20,000	4	25
	$20,000-$34,999,	7	44
	$35,000- $49,999	1	6
	$50,000-$64,999	2	13
	>$95,000	2	12.5

The Demographic Questionnaire (Appendix F) asked parents to rate the severity of their child's ASD symptoms (Figure 5). A review of the ratings indicated moderate severity of symptoms across all skills, with responses ranging from somewhat severe to mild. Two parents rated the overall severity of their child's symptoms as very severe, one parent rated their child's social skills as severely deficient, and another parent rated their child's stereotypies as very severe. It is important to note, these two respondents did not rate their children's overall symptoms as "very severe". Motor issues appeared to affect the children the least, with half the respondent reporting either no issues at all or very mild symptoms (N=8) and none ranking it as very severe (N=0). Social skills, self-help skills, and disruptive behaviors were reported as those areas showing the most moderate or somewhat severe symptoms. The majority of participants ranked their children's symptoms as moderate or somewhat severe for social skills (N=13), self-help skills (N=13), and disruptive behaviors (N=14). Stereotypies appeared to affect all the participants' children but to varying degrees. One participant noted very severe symptoms, the majority ranked the symptoms within moderate to somewhat severe range (N=10), and five reported mild symptoms.

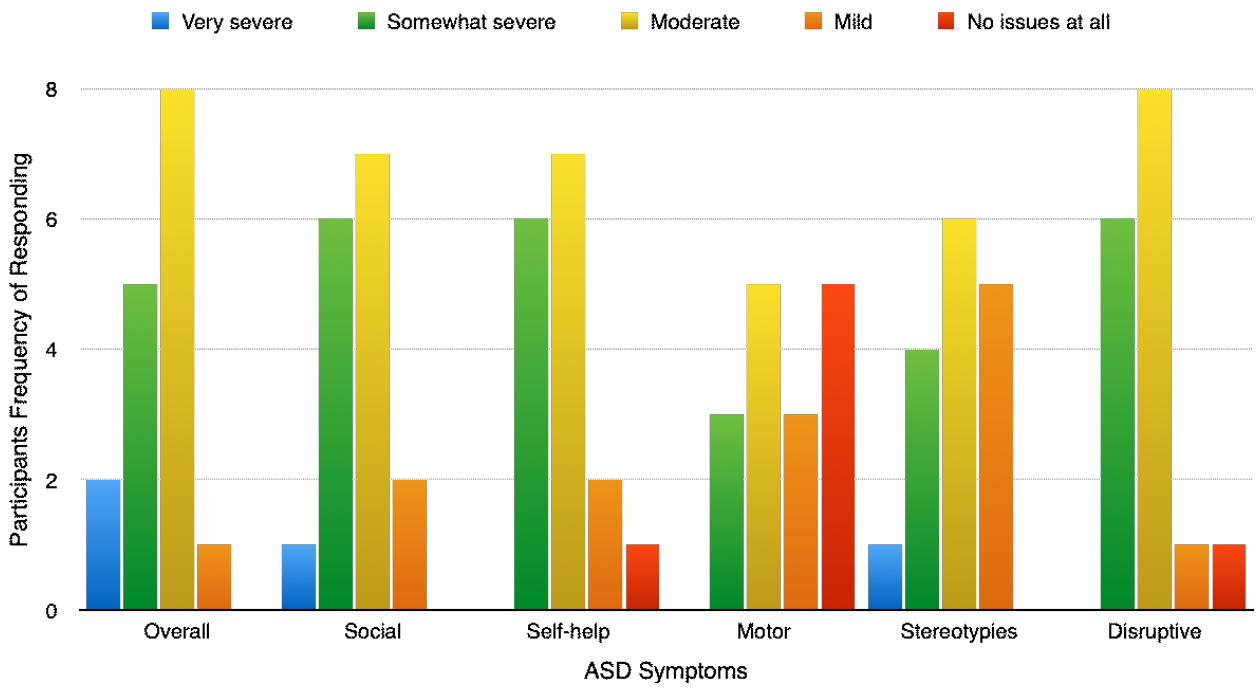

Figure 5. Figure Reflecting How Parents Rated the Severity of their Child's Symptoms.

The Demographic Questionnaire requested participants to identify the frequency of their child's maladaptive behaviors (Figure 6). The most frequently documented behavior was "taking other people's property" occurring on a daily basis (N=8) or more than once a week (N=5). In contrast, "vandalism or destruction of property" was the least frequent behavior, occurring rarely or never (N=13) or once to three times per week (N=3). The remainder of the behaviors, including "verbal aggression" (N=8), "self-injurious behavior" (N=9), and "non-compliance or defiance" (N=9) were the next most frequently reported behaviors at least once a week. The remaining participants reported seeing these behaviors "rarely" or "never."

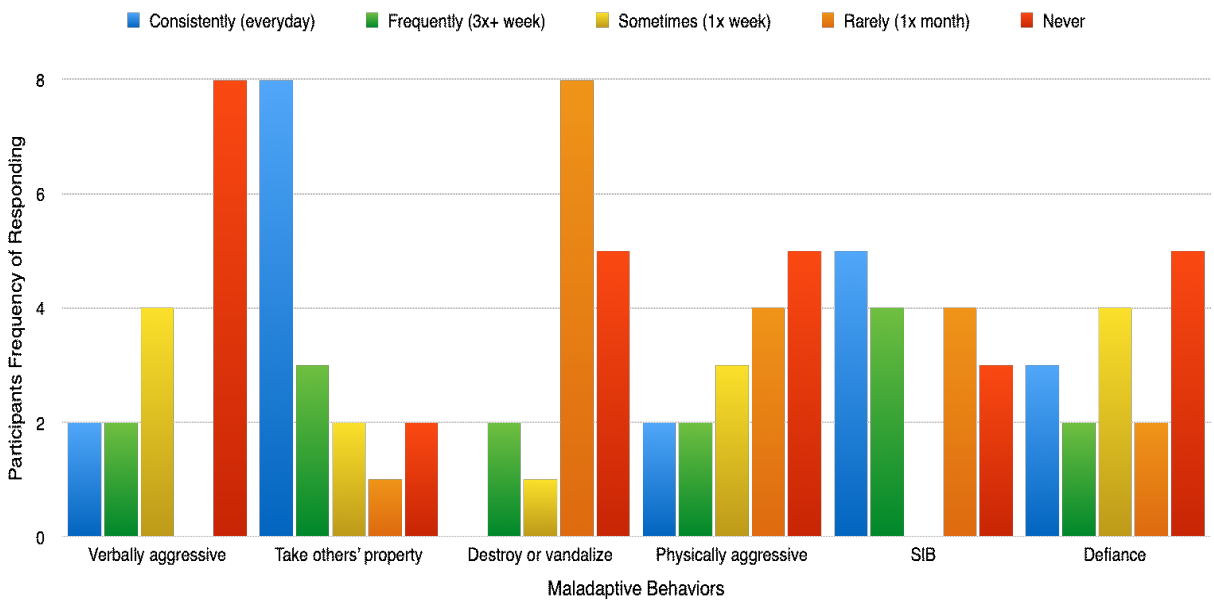

Figure 6. Figure Reflecting How Parents Rated their Children's Maladaptive Behaviors.

RQ1 Results: To what extent were participants able to access the content on the hosting site each week?

Forty-one participants expressed interest in enrolling in the parent training. Thirty-nine signed consent forms were received, and two participants granted consent in a written email as they informed the researcher they did not know how to sign electronically, nor did they have access to a scanner or printer. Thirty-eight people created user accounts, although four of the respondents who created accounts never advanced to completing the first survey. Five people watched the videos in the first module, and six other participants completed the accompanying surveys for the first module but did not proceed any further with the parent training. Seven participants completed at least half of the modules, three of them reaching the final module but never completing the whole parent training. The researcher sent a reminder e-mail in mid-April to participants who had not accessed their account recently. One participant responded, saying

they had no problems accessing the previous three modules, but their children were home due to the pandemic making it challenging to complete the parent training.

The Online Access Survey (Appendix O) measured the ease with which participants accessed the hosting site and the online content each week. This survey consisted of Likert-scale questions (4), a closed-ended question (1), and an open-ended question (1) requesting additional information regarding their experiences accessing content on the online platform. The surveys were administered at the end of each weekly module. Descriptive statistics was used to determine the frequency of certain responses. The online access survey results indicated all participants reported "very easy" or "somewhat easy" in response to ease of logging on to the platform website and using their preferred device to access the presentations. No participants reported any difficulty across the six modules.

The closed-ended question asked participant to identify any problems encountered specific to the pretests, video presentations, embedded videos, active responses, posttests, or others. Participants reported difficulty responding to the surveys in nine instances across the six modules. Three people experienced difficulties in the final module, two in module three, and one each in the remaining four modules. Two participants mentioned problems watching the embedded videos in two different modules. A range of devices was used to access the parent training, including smartphones, tablets, and computers. There was no difficulty reported with logging onto the platform or accessing the content given the use of any particular device. The sixth and final question in the Online Access Survey asked participants to share any additional information to improve the presentation's access or quality. No comments referenced improving access to the platform, modules, or videos as the participants did not encounter any difficulty accessing either the site or the content. However, some feedback for improvements in general

mentioned including subtitles for videos in languages other than Spanish (4), the audio was lower in some videos (1), the use of certain color backgrounds combined with a specific font in the power points was difficult to visualize (1), some typos in the presentations (1), to provide reasons for the correct answers for all the questions (1), and, finally, the way some questions were structured generated confusion specifically in module six (1).

RQ2 Results: What were parent perceptions regarding satisfaction with the parent training?

The Parent Training Satisfaction Survey (Appendix P) was administered after the six-week parent training. The survey included Likert-scale questions (5), closed-ended questions (2), and open-ended questions (7). The Likert-scale questions measured the participant's experiences and level of satisfaction with the parent training. The mode was determined to be the best measure to represent the participants' responses to the Likert-scale questions because it allows for visualization of the distribution of responses (Figure 7). The majority of the participants (N=15) would recommend this parent training to families and friends and found the content was as expected and applicable to their lives. Fewer than half of the respondents (N=7) noted the information presented was new, and more than half (N=14) expressed confidence in applying this knowledge with their children. One participant responded "disagree" on four of the five questions, indicating dissatisfaction with the parent training.

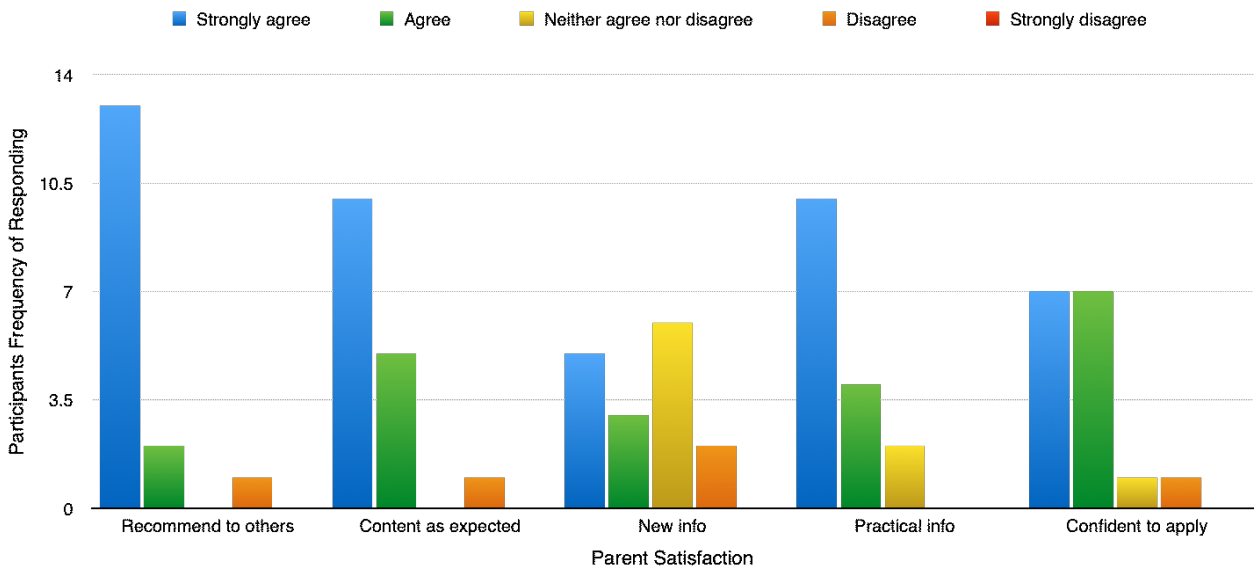

Figure 7. Bar Graph Reflecting Parental Satisfaction with the Parent Training.

The two closed-ended questions asked participants to share specific parts of the parent training they found useful and which sections they felt needed improvement (Figure 8). The content of the parent training was most frequently identified by the respondent as the most useful part (N=10), followed by video examples (N=5) and the presentations itself (N=1). The questions incorporated in the presentation were rated as part of the parent training that needed the most improvement (N=6). The video examples (N=4), the presentations (N=4), and the content (N=2) were also identified as areas for improvement.

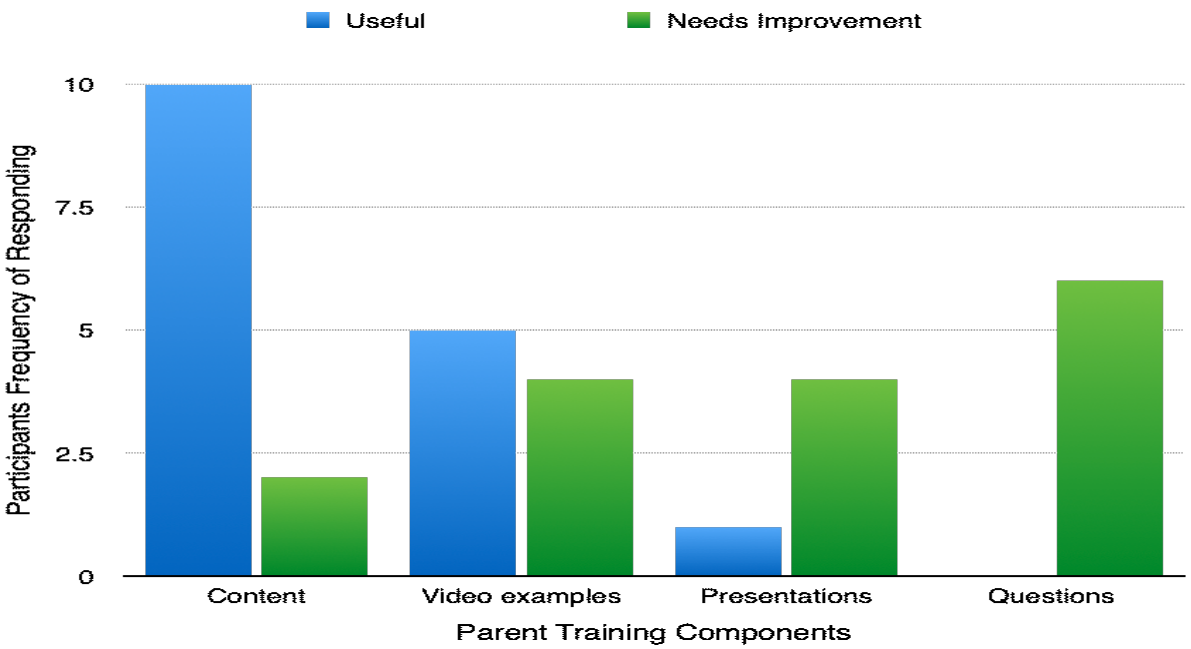

Figure 8. Bar Graph Reflecting Participant Perspective on What Was Useful and Needed Improvement.

The Parent Training Satisfaction Survey (Appendix P) included seven open-ended questions to address four constructs that were qualitatively analyzed: satisfaction, relevance, improvements, and additional feedback. Two a priori codes were identified for the construct for satisfaction: "satisfied" and "not satisfied." Six a priori codes, one for each of the modules, were identified for the construct on relevance. When asked which module was the most or least relevant to their situation, seven participants cited the sixth and final module containing strategies for toilet training, feeding disorders, and sleep disturbances as the most relevant to their situation. However, eight other respondents noted that this same module was the least relevant to them. Other participants identified learning how to use prompts (N=3), functions of behavior (N=2), and reinforcement (N=1) as especially relevant.

The researcher did not have any a priori codes for the third and fourth constructs, which

measured participants' feedback regarding the parent training due to the uncertainty of what responses would be received. Therefore, the answers to the open-ended questions were reviewed, and emergent coding was used. Thee emergent codes were linked to the construct of improvements: imitation, language, and communication. Four emergent codes were linked to the construct of feedback: more videos, improve audio, subtitles, and more questions.

Once evidence was identified and codes assigned, the codes were examined again for patterns during a second cycle, themes were then derived (Table 9). The qualitative analysis of the Parent Training Satisfaction Survey involved eight a priori codes and seven emergent codes. The first two themes of "satisfied" and "not satisfied," derived from the two a priori codes, were analyzed alongside the quantitative data from the five Likert-scale questions. There was alignment with the majority of participants (N=15) responding with satisfaction. One respondent indicated dissatisfaction with the parent training, claiming that while the content was useful, the videos were boring and not engaging.

Three themes emerged from the six a priori codes related to the six modules: "theory," "behavioral strategies," and "problem behaviors." When transformed into quantitative data, "behavioral strategies" (N=6) and "problem behaviors" (N=8) were identified as the most salient themes. When participants were questioned regarding additional information they would like to see included, a range of ideas, codes emerged, including language, communication, and imitation. However, these codes resulted in only one common theme, "acquisition of skills," where the participants sought strategies on how to teach their children to acquire specific skills and not just manage their problem behaviors. When this data was quantified, all the respondents (N=5) sought advice on working directly with their children to teach them skill acquisition. Four final codes emerged when analyzing the qualitative data provided in response to what

improvements participants would like to see in a revised course: more video examples, correct audio, add subtitles to videos, and more questions throughout the presentation. The codes were examined, and two dominant themes were identified: “content” and “quality.” These themes were transformed into quantitative form and reflected that more than half of the participants (N=11) recommended more video examples and questions embedded in the presentation.

Table 9

Thematic Analysis of Parent Satisfaction Survey

Construct	Code	Themes
Satisfaction	Satisfied	Satisfaction
	Not satisfied	Dissatisfaction
Relevance	Module 1	Theory
	Module 2	Strategies
	Module 3	Strategies
	Module 4	Strategies
	Module 5	Problem Behavior
	Module 6	Problem Behavior
Additional Feedback	Imitation	Acquisition Skills
	Language	Acquisition Skills
	Communication	Acquisition Skills
Improvements	More video examples	Content
	Correct audio	Quality
	Subtitles	Quality
	More questions	Content

A final open-ended question requested participants share additional comments or concerns. Responses included suggestions to incorporate additional content about the Picture Exchange Communication System (PECS), alternative communication devices, how to teach

social skills and imitation, and how to respond to aggressive and self-injurious behaviors. Respondents were grateful for the parent training and seemed very satisfied with the content with one exception.

To further evaluate parent satisfaction, an optional Post-Intervention Semi-Structured Interview (Appendix Q) was conducted at the online training modules' conclusion. None of the participants "opted-in" when that choice was provided at the end of the training, however four participants agreed to an interview following their request to the researcher for additional information from the trainings though email. A mutually agreed upon time was established, and the researcher telephoned the participant to interview them. Each of the phone calls lasted approximately 15 minutes. Interviews were not recorded or transcribed; however, the researcher took copious notes on the participants' responses. A priori codes were assigned using the same codes derived from the Parent Training Satisfaction Survey, satisfaction and dissatisfaction, and six codes were assigned to each of the six modules.

All four respondents indicated each module's duration, and the parent training as a whole was good. Two participants mentioned they had completed the modules in less time and the full six weeks was not necessary. Despite all four respondents saying the presentation's quality was good, two suggested subtitles be included with videos, especially those not in Spanish. One participant pointed out the audio was slightly lower in some portions of the presentation. All four answered that the content was very useful, and one specifically pointed out they liked the progression of material from theoretical to a concrete application.

When asked what modules they found most relevant, two participants identified the section on prompts, another noted consequences and positive reinforcement. The fourth reported the final module on problem behaviors. When posed the question which module they found least

relevant, three of the participants said all were relevant, although one of them noted the information presented in the first module was already known. However, she understood the need to include it. The fourth respondent singled out the final module on problem behaviors (toilet training, sleeping, and feeding issues) as the least relevant given his child was already toilet trained. At the end of the interview, participants were asked to provide suggestions to improve the parent training. Three respondents suggested adding more modules focused on teaching specific skills such as imitation, following instructions, joint attention, and communication. One respondent believed the modules on reinforcement and problem behavior should be expanded further.

When asked what specifically they would like to see in a revised version of the parent training, again, there was variety in the responses. However, the common thread focused on acquiring skills, especially communication and socialization, and the inclusion of more video examples. The final question asked participants to share any additional thoughts on the parent training. Three of the participants thanked the researcher for providing the parent training, one saying they wished the parent training was available when her daughter was diagnosed. Another respondent was grateful for the free parent training as he noted most courses are expensive. One final comment suggested the parent training show more videos of actual implementation and offered an option to verify parents are properly implementing these strategies.

RQ3 Results: To what extent does an online parent training intervention increase parents' knowledge of ABA principles and strategies?

The parents' knowledge of ABA was assessed in two ways: using a pre and post-knowledge test before and after the entire training and using pre and posttests at the beginning and end of each online module.

Before beginning the six-week parent training, participants completed a six-question Pre-Knowledge Test (Appendix H) that included questions on ASD symptoms, positive reinforcement, functions of behavior, prompts, and strategies to prevent maladaptive or excess behaviors. The first question in the module was a true or false question about ASD symptoms that only two people answered correctly on the pre-knowledge test. In the post-knowledge test, all participants with one exception (N=15) answered the question correctly. The second question was another true or false statement about functions of behavior, and every participant (N=16) answered it correctly both in the pre and post-knowledge test. Few participants (N=3) answered the third question on positive reinforcement correctly in the pre-knowledge test, and more than half (N-9) answered it correctly in the post-knowledge test. Slightly more than half of the participants (N=9) answered the question on three step prompt procedure correctly in the pre-knowledge test, and two more (N=11) answered correctly in the post-knowledge test. Seven participants answered the question on prevention strategies correctly. In the post-knowledge test, the majority (N-14) selected the correct answer choice. The final question on sleep disorders was answered correctly by four participants, and in the post-knowledge test, all participants answered correctly. Five participants scored 100% in the post-knowledge test, and all participants showed improvement in their scores.

The descriptive statistics summarized in Table 10 show the mean scores of the pre and post-knowledge tests, as well as the standard deviation and standard error. The mean score on the pre-knowledge test was 55%. The post-knowledge results increased by approximately 28% points to 83%. The standard deviation of 18 was higher for the pre-knowledge test suggesting more dispersion in the replies than in the post-knowledge test.

Table 10

Descriptive Statistics for Pre and Post-Knowledge Test for the Parent Training

	Mean	N	Std. Deviation	Std. Error Mean
Pre-Knowledge	55%	16	18	4.504
Post-Knowledge	83%	16	15	3.708

A paired t-test analyzed pre-knowledge and post-knowledge test scores. The standard deviation was 21.7, suggesting great variance in the scores relative to the mean (Table 11). With a 95% confidence interval value, the p-value was .05. The sig (2-tailed) value score of .000 was highly significant and suggests it was the parent training, and not chance, leading to an improvement in test scores for the post-knowledge test. Most likely, the p-value was very small, less than 0.0005, and was rounded down.

Table 11

Paired t-test for Pre and Post-Knowledge Tests				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pre & Post-Knowledge Tests	28.13	21.74052	5.4	16.540	39.710	5.175	15.000	0.000

The Pre and Posttest Surveys (Appendix I-N) were administered weekly before and after each of the six modules. Therefore, there were six pairs of tests completed by each of the participants. Each of the pretests contained five questions that tested the participants' knowledge of the concept or theme contained in that week's module. The themes covered included

understanding autism symptoms and applied behavior analysis, functions of behavior, consequences, prompts and fading, prevention strategies, and how to deal with common problem behaviors. The posttest contained the same five questions as the pretest plus an additional question regarding the participants' confidence in implementing the learned concepts or strategies.

Module 1 Pre and Posttest: ABA, Behavior, and Antecedents. The mean pretest score for module 1 was 81% (Table 18). Six participants scored 100%, six scored 80%, three scored 60%, and one participant scored 40% on the pretest for Module 1. The mean posttest score was 94% (Table 18). Eleven respondents received a perfect score on the posttest, and the remaining participants scored 80% (N=5). The pretest for this module reflected the highest pretest mean, 81%, for any of the six modules in the parent training as well as one of the highest posttests means, 94%. The first question asked if there were any treatments for autism and posed a true or false question. This question was the most difficult since half the participants (N=8) answered it correctly and was the only question in the entire parent training that reflected a decreased posttest score (N=4). All participants responded accurately to the second question identifying evidence-based practices in both the pre and posttests. For the remaining three questions, asking how to best define ABA and how to define behavior and antecedent, most participants answered these questions correctly (Table 12). In the posttest, all participants (N=16) answered these questions correctly, with one exception (N=15).

Table 12

Module 1- ABA, Behavior, & Antecedents: Average Number of Correct Responses Across All Participants

	Pretest	Posttest
Q1: There are no treatments for autism.	8	4
Q2: Which of the following are considered evidence-based practices?	16	16
Q3: ABA is best described as:	14	16
Q4: It is recommended that behavior be described by:	14	15
Q5: An antecedent is a term used to describe:	13	16

Module 2 Pre and Posttest: Functions of Behavior. The mean pretest score for module 2 was 60% (Table 18). One person scored 100%, five scored 80%, four scored 60%, five scored 40%, and one scored 20% on the pretest. The mean posttest score was 96% (Table 18). Fourteen participants answered all the posttest questions correctly, and the other two scored 80% and 60%, respectively. The pretest reflected the second-highest score, after Module 1, although it was significantly lower at 60%. The posttest results were the highest of any of the modules, 96%, and revealed the second-highest increase in score. The first question asked participants to identify how many functions of behavior there are to which only two participants selected the correct response (N=2) (Table 13). All participants, with one exception (N=15), answered it correctly on the posttest. Nine participants answered the second question on identifying a behavior correctly in the pretest, and all responded to it correctly in the posttest (N=16). The third and fourth questions about the functions of behavior were answered correctly by the majority of participants (N=14) and (N=13). All responded correctly to both of the posttest questions (N=16). The final question, which presented a scenario in which the behavior's function needed to be identified, received correct responses from about half the participants (N=10) in the pretest. In the posttest,

almost all answered correctly (N=14).

Table 13

Module 2 – Functions of Behavior: Average Number of Correct Responses Across All Participants

	Pretest	Posttest
Q1: How many functions of behavior are there?	2	15
Q2: Which of the following is not a function of behavior?	9	16
Q3: Before determining the function of a behavior you should do all of these except	14	16
Q4: Which of the following is not a true statement	13	16
Q5: When the alarm goes off in the morning, Sam throws the alarm clock… What is the function?	10	14

Module 3 Pre and Posttest: Consequences. The mean pretest score for module 3 was 53% (Table 18). Four participants scored 80%, three scored 60%, eight scored 40%, and one scored 20% on the pretest. The mean posttest score was 83% (Table 18). In the posttest, eight participants scored 100%, and the remaining scores were 80% (N-4), 60% (N=2), and 40% (N=2). The average pretest mean score for this module on consequences was the second lowest of the six modules, 52%, as was the posttest mean, 82%, although the mean increased 30%. The first and second questions asking to define positive reinforcement and identify when it is most effective were answered correctly by most of the respondents in the pretest (N=14 and N=15) and improved to N=15 and N=16 for the posttest (Table 14). The remaining three questions received fewer correct responses. Three participants selected the correct response (N=3) for the third question, which required selecting the true statement regarding positive reinforcement. Twelve participants responded correctly in the posttest. A single participant (N=1) answered the fourth question correctly in the pretest, which asked them to choose the non-example of positive reinforcement. The number of correct responses increased in the posttest (N=11). The final

question asked parents how they identified their child's reinforcer and was answered correctly by about half the participants (N=9). In the posttest, all but three participants (N=12) answered correctly.

Table 14

Module 3- Consequences: Average Number of Correct Responses Across All Participants

	Pretest	Posttest
Q1: Positive reinforcement is…	14	15
Q2: For positive reinforcement to be most effective…	15	15
Q3: Which of the following statements about positive reinforcement is true?	3	12
Q4: Which of the following is not an example of positive reinforcement?	1	11
Q5: How can I find out what is a reinforcer for my child? All of these answers except	9	13

Module 4 Pre and Posttest: Prompts. The mean pretest score for module 4 was 46% (Table 18). Two participants scored 80% and the other participants scored 60% (N=6), 40% (N=5), 20% (N=1), and 0% (N=2) on the pretest. The mean posttest score was 76% (Table 18). In the posttest, six participants received 100%, while the remaining participants scored 80% (N=5), 60% (N=1), and 40% (N=4). The two participants who scored 0% received scores of 80% and 100% in the posttest. This module had the lowest mean pretest, 46%, and posttest scores, 76%, even though the difference reflected an increase of 30%. The first question asked participants a true or false statement about prompts. It was answered correctly by three participants in the pretest and by all participants (N=16) in the posttest. The second question asked how best to provide a prompt and was answered correctly by four participants in the pretest and by nine in the posttest. The third question asked how much time should elapse before providing a prompt and was answered correctly by six participants in the pretest and thirteen

after completing the module. Six people accurately identified the three steps in the 3-step prompt procedure in the pretest. The correct answers increased to 14 in the posttest. The last question asked when to implement the 3-step prompt procedure and was answered correctly by half the participants (N=8). One more person answered the last question correctly on the posttest (N=9).

Table 15

Module 4- Prompts: Average Number of Correct Responses Across All Participants

	Pretest	Posttest
Q1: The only prompts given to help a person follow through or complete a task are physical or verbal prompts?	3	16
Q2: The best way to provide a prompt is…	4	9
Q3: How much time should we give the person to comply with a request before providing a prompt?	6	13
Q4: 3-step prompting uses which of the following prompts except...	6	14
Q5: When is the best moment to use 3-step prompting?	8	9

Module 5 Pre and Posttest: Prevention Strategies. The mean pretest score for module 5 was 55% (Table 18). Three people scored 80%, eight people scored 60%, three people scored 40%, and two people scored 20% on the pretest for Module 5. The mean posttest score was 93% (Table 18). Twelve people scored 100% in the posttest, and the remaining scores were 80% (N=2) and 60% (N=2). The pretest mean for Module 5 is tied in second lowest place with Module 6, scoring 55%. However, twelve participants scored a perfect score on the posttest, raising the posttest mean to 92.5%, reflecting the most improved posttest scores of the six modules in the parent training. The first question about behavior momentum was answered correctly by three participants in the pretest and fifteen in the posttest. The second question about strategies applied with transitions was answered correctly by five participants in the pretest and by fourteen respondents in the posttest. The question on visual schedules was answered correctly

by less than half the participants (N=6) during the pretest, but increased to fourteen correct responses in the posttest. The fourth question, a true and false question about breaking down tasks into smaller steps, was answered correctly by all the participants (N=16) in both the pre and posttests. The last question selecting which was not a prevention strategy was correctly answered by most participants in the pretest (N=14) and by all but one (N=15) in the posttest.

Table 16

Module 5- Prevention Strategies: Average Number of Correct Responses Across All Participants

	Pretest	Posttest
Q1: Which of the following is more likely to result in a positive response?	3	15
Q2: A useful strategy to help with transition is...	5	14
Q3: A visual schedule would be useful for a child for the following reasons except…	6	14
Q4: Breaking down a task into smaller, easier steps is a prevention strategy.	16	16
Q5: Examples of prevention strategies are all of the following except…	14	15

Module 6 Pre and Posttest: Strategies for Problem Behaviors. The mean pretest score for module 6 was 89% (Table 18). Five participants scored 80%, six scored 60%, two scored 40%, two scored 20%, and one scored 0% on the pretest. The mean posttest score was 89% (Table 18). In the posttest, eleven participants answered all the questions correctly and scored 100%. The other participants scored 80% (N=2), 60% (N=2), and 40% (N=1). The pretest mean was 55% and the posttest mean was 89%, showing a mean gain of approximately 34%. The first two questions referenced toilet training. Few participants (N=3 and N=4) answered it correctly in the pretest. The number of correct responses increased to fifteen and eleven in the posttest. The third question asked participants to describe sleep disturbances. Ten participants answered this

question correctly in the pretest, and almost all (N=15) answered it correctly in the posttest. The fourth and fifth questions referred to feeding selectivity. The majority of the participants answered the questions correctly in the pretest, thirteen and fourteen, respectively. In the posttest, all participants (N=16) answered the fourth question correctly, while almost all (N=14) answered the last question correctly.

Table 17

Module 6- Strategies for Problem Behaviors: Average Number of Correct Responses Across All Participants

	Pretest	Posttest
Q1: Some methods to increase successful elimination on the potty include all of these except…	4	15
Q2: Which of the following statements is not true? Using a diaper	3	11
Q3: Sleep disturbances are defined as all of these except…	10	15
Q4: Which of these should you do?	13	16
Q5: Withholding food until the child eats is the recommended way to get your child to eat.	14	14

The pretest scores for the first module were higher than any other pretest scores, with an average of 81% (Table 18). Therefore, the change in scores from pre to posttest was the lowest, averaging an increase of 12.5%. Module 4 had the lowest pretest and posttest scores, although the average mean improvement was 30%. The remaining modules all reported an increase of at least 30% from pretest to posttest results and average posttest scores ranged from 82% to 96%.

Table 18

Descriptive Statistics for Pre and Posttests for the Parent Training

		Mean	N	Std Deviation	Std. Error Mean
Module 1	Pretest	81%	16	18.574	4.644
	Posttest	94%	16	9.574	2.394
Module 2	Pretest	60%	16	21.909	5.477
	Posttest	96%	16	10.878	2.720
Module 3	Pretest	52%	16	19.149	4.787
	Posttest	82%	16	21.756	5.439
Module 4	Pretest	46%	16	23.910	5.977
	Posttest	76%	16	24.461	6.115
Module 5	Pretest	55%	16	18.619	4.655
	Posttest	92%	16	14.376	3.594
Module 6	Pretest	55%	16	24.766	6.191
	Posttest	89%	16	19.279	4.820

A paired t-test analyzed pre and posttest scores. The standard deviation ranged from 16.125 for Module 1 to 37.238 in Module 4 (Table 19). The high values suggest there was great variance in the scores relative to the mean. Module 1, which had the lowest standard deviation implying scores were not as dispersed, also reflected the smallest mean increase in posttest scores. The standard deviation aligns with the modest increase in posttest survey scores compared to other modules that reported bigger increases in posttest scores than pretest scores. Module 4 reflected the largest standard deviation, which suggests scores varied greatly. With a 95% confidence interval value, the p-value is .05. Modules 2, 3, 5, and 6 reflect a sig (2-tailed) value score of .000, which is highly significant. Most likely, the p-value is very small, less than 0.0005, and was rounded down. The low value suggests it was the parent training, and not

chance, leading to improved test scores for the posttest. The sig value for Module 1 was 0.007, and Module 4 was 0.006. These numbers exceed the p-value of 0.005; thus, we do not have enough evidence to conclude that parent training led to increased posttest scores.

Table 19

Paired t-test for Pre and Posttests					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Module 1	Pre & Posttest 1	-12.500	16.125	4.031	-21.092	-3.908	-3.101	15	.007
Module 2	Pre & Posttest 2	-36.250	19.621	4.905	-46.706	-25.794	-7.390	15	.000
Module 3	Pre & Posttest 3	-30.000	23.094	5.774	-42.306	-17.694	-5.196	15	.000
Module 4	Pre & Posttest 4	-30.000	37.238	9.309	-49.843	-10.157	-3.223	15	.006
Module 5	Pre & Posttest 5	-37.500	24.083	6.021	-50.333	-24.667	-6.228	15	.000
Module 6	Pre & Posttest 6	-33.750	28.018	7.004	-48.680	-18.820	-4.818	15	.000

The last question in the posttest surveys varied from the five specific questions in the pretests, asking participants to rank their comfort level in applying the strategies and knowledge shared in the modules with their children. The questions were answered using a Likert-scale and are summarized in Figure 9, using modes as the measurement of central tendency to represent the range of responses. The majority of the participants felt either "very comfortable" or "somewhat

comfortable" implementing the strategies learned. No participants rated their comfort level as "not comfortable." One participant selected "I don't know" as a choice for the module explaining prevention strategies. However, this same module on prevention also received the highest number of "very comfortable" ratings from the respondents. The first four modules received a very comfortable or somewhat comfortable rating by at least thirteen of the sixteen participants (Figure 9). It can be concluded the participants felt comfortable applying all the knowledge they had learned in the six modules.

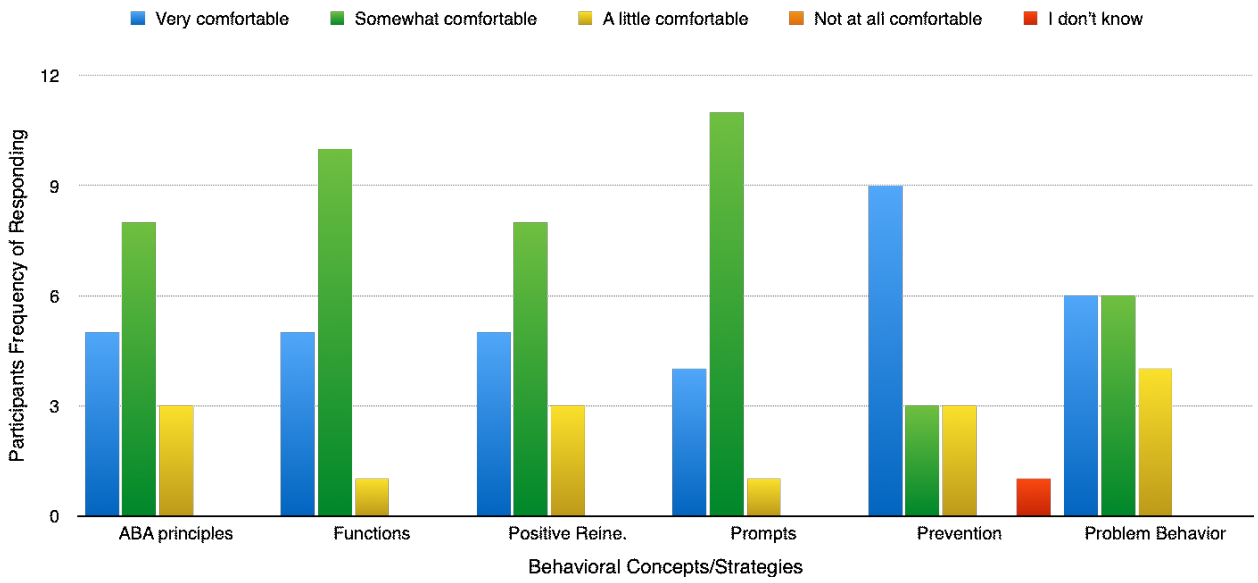

Figure 9. Summary of Parents' Self-reported Confidence Level in Applying Learned Strategies with their Children.

RQ4 Results: To what extent does an online parent training intervention have an impact on parents' stress levels?

The Autism Parent Stress Index (Appendix G) asked parents to self-report their stress in thirteen different domains using a Likert-scale with five potential responses. The Likert scale

answers were formatted for SPSS by assigning value labels (0 through 4) for each of the five responses. If applying the value labels of 0 as "not stressful" and 4 as "so stressful they could not cope," five domains reflected an increase in posttest stress scores, three reflected no change, while the remaining five domains showed a decrease.

In the APSI administered prior to the parent training, participants scored their stress levels as "so stressful they could not cope" in the domains of living independently (N=3), social acceptance (N=2), and self-injurious behavior (N=1). In the posttest, stress levels scored the highest for social acceptance (N=3), living independently (N=2), social development (N=1), communication (N=1), and tantrums (N=1). Intestinal issues and feeling emotionally close to their child were scored as the least stressful in both pre and post-administration of the APSI. Four domains reflected a change for the worse with parents reflecting a change in status from “not stressful” to “sometimes stressed,” in the domains of aggression, self-injurious behavior, sleep, and eating issues.

A paired sample t-test was conducted across each domain, which compared stress levels from the APSIs completed before and after the training across each of the thirteen domains (Table 20). For five of the thirteen domains, post parent training APSI responses reflected increased stress levels. These domains included social skills development, communication, sleep, feeling emotionally close to their child, and concerns about their child's acceptance by society. Three domains, transitioning, eating selectivity, and toileting, showed no change in stress levels from the pre to post APSI administrations. The remaining five domains, tantrums, aggression, self-injurious behaviors, intestinal issues, and living independently, reflected reduced stress levels after the parent training. The standard deviations of the thirteen domains ranged from .365 to .772, which shows little variance in the responses from when participants completed the APSI

before to after the parent training. The p-values were above 0.05 across all of the scores from all of the domains. Therefore, there appears to be no statistically significant correlation between the APSI scores administered before and after the parent training suggesting the parent training did not have the desired effect of reducing parent stress.

Table 20

Paired t-test for Pre and Post APSI

					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Social Development	Pre and Post	-0.063	0.443	0.111	-0.298	0.173	-0.565	15	0.580
Communication	Pre and Post	-0.250	0.577	0.144	-0.558	0.058	-1.732	15	0.104
Tantrums	Pre and Post	0.063	0.443	0.111	-0.173	0.298	0.565	15	0.580
Aggression	Pre and Post	1.88	0.655	0.164	-0.162	0.537	1.145	15	0.270
SIB	Pre and Post	0.250	0.683	0.171	-0.114	0.614	0.146	15	0.164
Transitions	Pre and Post	0.000	0.365	0.091	-0.195	0.195	0.000	15	1.000
Sleep	Pre and Post	-0.438	0.512	0.128	-0.711	-0.164	-3.416	15	0.004
Food	Pre and Post	0.000	0.516	0.129	-0.275	0.275	0.000	15	1.000
Intestinal	Pre and Post	0.063	0.772	0.193	-0.349	0.474	0.324	15	0.751
Toileting	Pre and Post	0.000	0.365	0.091	-0.195	0.195	0.000	15	1.000
Emotionally Close	Pre and Post	-0.250	0.577	0.144	-0.558	0.058	-1.732	15	0.104
Social Acceptance	Pre and Post	-0.063	0.443	0.111	-0.298	0.173	-0.565	15	0.580
Live Independently	Pre and Post	0.188	0.544	0.136	-0.102	0.477	1.379	15	0.188

It bears noting that a global pandemic (Coronavirus or COVID-19) was identified in December 2019 and led to nationwide lockdowns throughout 2020, starting in mid-March, which

may have had an impact on parent stress levels. Research has noted that parents of children with ASD experience higher levels of stress than those with other intellectual disabilities or even illnesses like diabetes or cancer (Magaña et al., 2015). Additionally, parents' stress levels are directly proportional to the severity of their child's disruptive behaviors (Glazzard & Overall, 2012; Harper et al., 2013; Miranda et al., 2015). During the pandemic, parents of children with ASD reported their children's behaviors as more intense and more frequent than prior to the outbreak (Colizzi et al., 2020) suggesting that parents may have subsequently experienced a surge in stress levels.

Conclusions

This study evaluated the effectiveness of an online delivery method for training Hispanic parents of children with ASD to improve parental knowledge of ABA and address challenging behaviors and thereby decrease parental stress. Two of the research questions were process questions focused on the implementation of the parent training. One question measured access and the other parent satisfaction. The parent participants had no difficulties accessing the hosting platform or the presentations. The unanimous positive responses eliminated restricted access or connectivity as factors impacting scores on the parent knowledge test, pre and posttest surveys, and parent stress instruments. Responses regarding parent satisfaction with the parent training were mostly positive, with only one respondent appearing dissatisfied. The results indicated that offering a parent training in an online delivery method was feasible and was well received by parent participants.

Two evaluation questions measured outcomes as a result of the online training: parent knowledge before and after parent training and parent stress before and after parent training. The findings suggest that knowledge of ASD and ABA was gained from the online parent training

program. There was a 28% increase in the mean score (83% correct) from the pre-knowledge test scores before starting the training to the post-knowledge test at the completion of the training. Following each individual module, the posttest scores reflected an increase from pretest scores across all of the modules by an average of 25% (range 12% to 37%). In summary, this six-week parent training supported the effectiveness of an online delivery method for teaching Hispanic parents of children with ASD about ABA principles and strategies. For the second outcome measure, the findings suggest that stress levels post-intervention, measured by the ASPSI, did not reflect lower parent stress levels compared to before the training. The hypothesis posed by this study was that the implementation of an online parent training in Spanish for Hispanic families of children with ASD would reduce parent stress levels and increase knowledge of strategies to manage challenging behaviors. The results appear to support increased parent knowledge while not supporting a decrease in parent stress levels. Participant recruitment and participant attrition were two of the major obstacles encountered in this study. The following section discusses the findings within the framework of each of the research questions.

Discussion

The purpose of this online parent training in Spanish was to provide support to Hispanic parents of children with ASD to access information on ABA and behavioral strategies. While the participants all confirmed Spanish as their native language, there was no verification process to verify if they had alternative means of accessing information to behavioral strategies beyond the offered parent training. The study's findings are discussed based on measuring online access and parent satisfaction through the process evaluation research questions. Parent stress levels and parents' knowledge of behavior management strategies and implementation are evaluated through the outcome evaluation research questions. In this section, the two process evaluation

questions will be discussed first, followed by the two outcome evaluation questions. Finally, the study's limitations will be examined and the implications for practice and future research will be reviewed.

Process Evaluation

The process evaluation findings evaluated the fidelity with which the parent training was delivered. Participants' feedback regarding their access to the parent training and their experiences and satisfaction with the content delivered will provide guidance for revisions to an improved parent training.

RQ1: To what extent were participants able to access the content on the hosting site each week?

The parent training was hosted on a platform called Thinkfic. Participants accessed the platform by typing Thinkific.com in their browser and creating an account with a password. Parents had free access to this site from when they created their account until the parent training was closed on July 6th, 2020. The platform required the user to follow a pre-specified sequence starting with the initial surveys and then each module from one through six in sequential order. The participants were required to complete the modules in a specific sequence and were unable to skip a module or survey. Each survey or video presentation was a prerequisite to move on to the next. There were no restrictions on access, meaning parents could complete the parent training as quickly or as slowly as possible.

In a semi-structured post-intervention interview, one of the participants mentioned he worked in the technology field and had never heard of the Thinkific platform. He complimented the platform as very user-friendly. Based on the responses, participants were fully able to access content on the hosting site each week. Any factors contributing to the non-completion of courses

were likely external, such as the pandemic or lack of interest or engagement in the parent training, and not related to accessing the site or the content itself.

The main threat affecting the access survey was difficulty with technology or the internet. None of the sixteen participants reported any difficulty accessing the website or using their preferred device to access the modules. However, in the closed-ended question, some responses noted difficulty responding to the surveys (9) and problems watching the embedded videos (2). Further clarification in the following open-ended question identified difficulty relating to not having the option to go back and change answers on a previously answered question in the survey. Problems watching embedded videos were only mentioned twice. They could likely be due to connectivity issues rather than a flaw with the online platform as no one else reported these concerns.

Only one previous research study examined the use of an online delivery following a PCIT model method and using a synchronous training format (Fleming et al., 2017). The PCIT model employs behavioral analytic principles and promotes parent involvement, two components prominent in the Spanish online parent training examined in this study. In Fleming et al.'s study (2017), five coaching sessions were provided via tele video conferencing, and the study reported that frequent technological difficulties caused interruptions. It occasionally made it impossible for training to take place at all. The findings from Fleming et al.'s (2017) study do not coincide with the results from the Access Surveys from the current study, which were unanimously positive and reported no connectivity issues or difficulty accessing the parent trainings. However, Fleming et al.'s (2017) study was a synchronous training, and the online access at predetermined times made it difficult for the participants to connect effectively. This study offered more flexibility to connect online as the training was asynchronous. It is possible that

network connectivity was limited, as Fleming et al.'s study (2017) took place in rural Australia several years earlier. Access to networks may have been a non-issue for the current study as internet connectivity is always expanding, thus providing increased coverage and improved access to internet services.

RQ2: What were parent perceptions regarding satisfaction with the parent training?

Parent satisfaction was measured using two instruments, a Parent Training Satisfaction Survey, and a Post-Intervention Semi-Structured Interview. The survey and the test were administered at the end of the six-week parent training. The optional interview was offered at the end of the parent training.

The Parent training satisfaction survey reflected that most respondents would recommend this parent training to others, found the content was as expected, was practical and useful, and felt confident in its application with their children. However, approximately half the participants noted that the content presented was not new to them, suggesting that they have sought or received information on ASD from other sources. The high scores in confidence applying the strategies support the presentations' efficiency in explaining and modeling the behavioral strategies.

After identifying content as the best part of the parent training, many participants pointed to the video examples as a strong component. However, participants suggested adding more videos would further improve the parent training. The recommendation for improvement by adding more videos does not necessarily mean there were not sufficient videos in the parent training, or they did not properly model the behavior. Instead, the participants would like to see more videos providing multiple exemplars of the behavior and behavioral implementation. Participants also mentioned the need to incorporate subtitles to the videos not in Spanish

suggesting, although the videos were representing physical behaviors, the participants would have benefitted from understanding the context. The lack of comprehension in these videos may have contributed to confusion in responding to questions related to behaviors reflected in those specific videos.

Some of the survey questions asked participants to select the modules that were the most and least relevant to them. While the last module, focusing on problem behaviors, specifically toilet training, feeding selectivity, and sleep disturbances, was considered the most pertinent by approximately half the participants, it was also ranked as the least relevant by the other half. Based on their child's age and level of functioning, each participant's personal situation likely impacted their responses, leading the responses to vary greatly. Every module, except the first, was ranked as most relevant by at least one participant. Many participants stated that all modules were relevant and did not highlight a specific one. This once again emphasizes how each participant found components of the parent training useful for them, possibly filling in gaps in their knowledge. The range of answers highlights the difficulty in delivering individualized parent training that meets each parents' needs. Each child presents a unique set of strengths and weaknesses, and each parent may have received training or information on specific strategies.

One participant responded disagree to four out of the five Likert-scale questions in the Parent Training Satisfaction Survey, indicating that overall she did not find the presentation useful. The responses to the open-ended questions by this particular participant pointed out that while the content was useful, the video presentations were tedious, the delivery was monotonous, and she was bored and considered abandoning the parent training altogether. While she was the only person to offer this feedback, out of sixteen participants who completed the six-week parent training, other participants who shared this sentiment could have contributed to participant

attrition. Thirty-eight parents initially created user accounts on the parent training platform, and thirty-four actually began the course. Eleven participants dropped out in the first module, and another seven progressed past the mid-point, module 3, but never completed the training nor provided feedback in the Parent Satisfaction Survey. Examining parent satisfaction in the current study provides guidelines for future research for online training parent training programs.

Attrition rates can contribute to understanding parent satisfaction with an intervention. Most studies examine parent satisfaction upon completion of a training program but do not examine the reasons for participant attrition during the course of a study. Previous research evaluating parent training included single case studies (Fleming et al., 2017; Lee et al., 2007), or the researchers did not experience attrition (Solomon et al., 2008) or did not include information on attrition rates in their studies (Grindle et al., 2009; Rivard et al., 2014). The results of the current study highlight the importance of future research measuring participant satisfaction. By seeking out feedback from participants who did not complete the parent training, researchers could gain information about areas of the study that led participants to drop out and monitor their comments for insight into how to improve the training and potentially mitigate attrition. Future research should measure satisfaction more frequently permitting participants who drop out to share their feedback and potential dissatisfaction with the training. Asking participants to share their experiences more often could also help identify particular modules or topics that resulted in attrition.

The Post-Intervention Semi-Structured Interview was optional, and four respondents participated. The respondents were aware this was no longer anonymous and that their responses were part of an experiment that could have impacted their answers. Although it was a small sample, there was agreement among the participants, specifically related to the parent training's

length and quality, which served to validate the findings. Each of the four gave a different response as to which module they found most and least relevant. Again, it can be concluded that these results are individualized, as it depends on their child's needs. Since this parent training was not limited by age, ability, or specific symptoms, it had to cater to a wide range of children on the spectrum. All participants who completed the optional interview expressed their satisfaction with the parent training.

A few articles exploring parent training research addressed participant satisfaction with the programs they had completed. Rivard et al.'s study (2014) concluded that there was no significant difference in outcomes between parents who received a pre-training than those who only received training at the time of services. However, parents who received the pre-training reported higher satisfaction rates as they felt supported and not so isolated. Another study (Grindle et al., 2009) linked parent satisfaction to parental expectations. Parents who anticipated their children would be more positively impacted by the parent training experienced lower satisfaction levels. This study's findings reported that the majority of the parents found the content to be as expected which may be directly correlated to their high levels of satisfaction with the online parent training. One participant did not find the content useful and was the sole respondent to state dissatisfaction with the intervention, thus supporting the link between the expectation of content and satisfaction. Rivard et al. (2014) and Grindle et al. (2009)'s studies guide future research by highlighting the importance of promoting emotional support to the parents and managing parent expectations at the onset of training.

Outcome Evaluation

The outcome evaluation sought to identify changes in the participants' knowledge and stress levels in response to completing the parent training. The questions in the surveys are all

quantitative, and the findings compared pre and posttest scores.

RQ3: To what extent does an online parent training intervention increase parents' knowledge of ABA principles and strategies?

The participants' knowledge of ABA principles and strategies was tested by administering a knowledge test before beginning the parent training and again upon its conclusion. Participants were also given pre and posttests for each module to measure changes in their knowledge of the content specifically presented in that week's module.

Pre and Post-Knowledge Test. Although half the participants noted the information presented in the parent training was already known to them, not a single participant answered all the questions correctly on the Pre-Knowledge test (Appendix H). More than half of the participants scored 50% or lower on the pre-knowledge test (N=10). The remaining participants scored 67% (N=3) and 83% (N=3). However, the majority of the participants scored 83% or above for the post-knowledge test (N=12). Five participants scored 100%, seven others scored 87%, and the remaining participants scored 67% (N=3) and 50% (N=1). The participant who scored the lowest in the post-knowledge test was the same person who expressed dissatisfaction with the parent training, stated it was boring and struggled to complete the modules. The lack of engagement could explain the respondent's low score. The increase in pre and post-knowledge test scores by 28% suggests that the online parent training did directly increase the participant's knowledge of ABA principles and strategies and that the training was an effective means to deliver this information.

The knowledge test consisted of six questions that were completed before and after the six-week parent training. The following discussion will analyze the overall results obtained for each question included in the pre and post-knowledge test. The answers provided to these

questions offer insight into the outcomes of the online parent training. For example, only two people answered a true or false question about ASD symptoms correctly on the pre-knowledge test, even though half the participants claimed the parent training content was not new. It is possible that although parents may have received information regarding treatment options and their child's symptoms, they were still unclear as to the different ways this disorder can manifest itself in individuals. Explicitly addressing the symptoms leading to a diagnosis may be irrelevant as the children of the participants already had a diagnosis. However, it may be worthwhile to expand this portion of the parent training if it will be made available to families whose children do not have a diagnosis. For the second question, all participants correctly stated that every behavior has a function that must be identified before it can be addressed. Although the question specifically addressed an ABA principle, it is also a common-sense statement not necessarily applicable to ABA or ASD, which could explain why everyone answered it correctly without first completing the module.

For the question on positive reinforcement, three participants answered correctly, while the remaining participants (N=13) selected the same incorrect answer choice. In the post-knowledge test, the number of correct responses increased (N=9); however, seven people still selected the same incorrect answer choice as in the pretest. The wording of the answer choices was very similar. The correct answer stated that "a reward will be given, and any behavior will happen more frequently." The incorrect answer, and the other selection made by the participants, stated "a reward will be given, and good behavior will happen more frequently." The only difference was the word "any" and "good." The positive reinforcement module may not have emphasized enough that undesirable behaviors can also be positively reinforced, albeit accidentally. Although the pre-knowledge tests alerted the participant of the correct answer after

responding, it did not explain why this was the appropriate response. However, upon answering the same question in the post-knowledge test, the correct answer was provided along with an explanation. The purpose of not including the correct answer in the pretest was for parents to learn why any behavior can be positively reinforced by listening to the presentation and seeing examples rather than being explicitly told. It might be appropriate to include the explanations for correct and incorrect answers after each question in the pre-knowledge test to provide immediate feedback to the participants and ensure multiple opportunities to reinforce the information.

The question on three step prompt procedure was answered correctly by about half the pre-knowledge test participants. Three participants selected the incorrect response "break a task down into three steps." On the posttest survey, eleven participants correctly answered the question, although four respondents again selected the incorrect response of “break a task down into three steps.” During the online training, a seven-minute-long video was dedicated to explaining how to implement this procedure. Each step was numbered: 1) give the instruction, 2) model the instruction, and 3) physically prompt child to complete the task. It is possible that numbering each step in the presentation of this skill led participants to believe it was broken down into three parts, and that is why they selected the incorrect answer during the posttest.

Seven participants correctly answered the question on prevention strategies. In contrast, six others selected a timer as a non-example of a prevention strategy during the pre-knowledge test. In the post-knowledge test, only two people answered the question incorrectly, but both again selected the timer as their answer. Although the use of a timer was listed as a possible means of preventing a maladaptive behavior, there was no accompanying video example specifically using a timer. The lack of a video modeling the application may have contributed to some confusion over how to apply a timer and could potentially be included in future revisions

of the parent training. The final question on the knowledge test asked participants to identify the percentage of people with ASD affected by sleep disturbances. The question was answered correctly by only three people in the pre-knowledge test compared to fifteen, out of a total of sixteen, in the post-knowledge test. It is important to compare the pre-knowledge test responses with those of the post-knowledge test completed after the six-week training program to evaluate intervention's effectiveness in teaching parents' behavioral strategies. By measuring the change in responses to each question, not just the total number, it is possible to examine what specific information and module resulted in the knowledge gains.

Pre and Post Test Surveys. The pretests and posttests administered before and after each module consisted of five questions. The first module introduced ASD and ABA principles and multiple people scored 100% on the pretest and an average score of 82%. The following modules presented more specific strategies, and the average pretest mean was approximately 50%. The posttest mean scores across all modules were 88% reflecting a significant improvement.

Module 1 Pre and Posttest: ABA, Behavior, and Antecedents. Module 1 presented a theoretical approach to ABA and behavior the researcher felt was a prerequisite to behavior management. The first question stated, "There are no treatments for autism" and asked participants to select if this was true or false. Eight people answered correctly in the pretest, saying this was false, and the correct number of answers decreased to four in the posttest. This was the only question in the parent training that reflected lower scores after completing the module. The wording of the question may have been confusing suggesting that there was no treatment when the module stated that although there was no cure, there were interventions that could address behavioral issues. The other four questions were answered correctly by most of the participants in both the pre and posttest. Based on the pretest high scores, the participants

appeared to have solid background knowledge of ASD and ABA. Posttest scores reflected the least gains in this module, 12%, although the pretest and posttest means were very high to begin with. It is not clear if participants' posttest scores and learning can be attributed to information received from this module's presentations.

Module 2 Pre and Posttest: Functions of Behavior. Module 2 focused on functions of behavior. This module presented numerous video examples of behaviors and asked participants to identify the function. This concept was further reinforced with scenarios that were reviewed in detail. All three sets of videos focused exclusively on behavior functions and appeared to have effectively solidified the participants' knowledge of these functions. In this module's pretest, the first question asking participants to identify a non-behavior was only answered correctly by two participants. The remaining four questions were answered correctly by at least half, if not the majority, of the participants. Almost all participants (N=14) earned a perfect score in the posttest suggesting that the module effectively contributed to increased parent knowledge regarding functions of behavior.

Module 3 Pre and Posttest: Consequences. Module 3 introduced the concept of consequences to behavior with an emphasis on positive reinforcement. The first question asked participants to identify the description of positive reinforcement. Only two people answered incorrectly. Although the question was worded differently, it asked the same question from the pre-knowledge test, which only three participants for right. The contradictory results suggest it could be the wording of the question or answer choices that led the participants to answer incorrectly in the Pre-Knowledge Test (Appendix H). The majority of the participants incorrectly answered question three on positive reinforcement. Most of the respondents (N=10) chose "saying "Good job" every time your child does something right" as a true statement about

positive reinforcement. Four people still selected the wrong answer in the posttest, with two respondents again selecting "good job" as their response. Although “good job” is certainly a way of reinforcing a correct response, it should not be used every time. The correct response was “positive reinforcement can reward an undesirable behavior.” While the researcher made an effort to repeat throughout the parent training that a parent can inadvertently reward an undesirable behavior, it may have required further emphasis. Another question asked participants to identify which was not an example of positive reinforcement and was answered incorrectly by all but one participant, thirteen of which selected the same incorrect response. Posttest scores reflected an increase of 30% from the pretest, but the posttest mean scores were the second lowest of the parent training. Although the scores would suggest that parents had increased their knowledge of positive reinforcement due to the parent training, the concept of positive reinforcement may not have been sufficiently well explained.

Module 4 Pre and Posttest: Prompts. Module 4 reviewed the different prompts that can be offered to help a child complete a task and focused explicitly on the three-step prompt procedure. This module received the lowest scores with less than half of the participants answering each of the pretest questions correctly. The second question asking how best to provide prompts was answered correctly by four people in the pretest. Although nine people answered the posttest question correctly, it was one of the questions with the most incorrect answers. The high number of incorrect posttest responses for this question suggests selecting which prompt to use, and when and how to apply them, was not clear with the participants. The last question asked parents to choose the best answer for when to use the three-step prompt procedure. Half the respondents answered correctly (N=8) selecting "when you give the child an instruction," and the other half selected "when the child refuses to follow instructions." In the

posttest, only one more person answered correctly than in the pretest (N=9), while the remaining seven once again selected the same incorrect response. In the comments section, one participant noted she felt the wrong answer choice was correct. She thought you would not offer prompts to a child unless they failed the attempt. If other participants agreed with her, it could be why this question received poor scores in the posttest. The answer choices for this question should be reviewed to eliminate any potential confusion between answer choices. The low posttest mean suggests that participants did not fully understand prompts and how to implement them by viewing this module.

Module 5 Pre and Posttest: Prevention Strategies. Module 5 reviews prevention strategies and how to implement them. The first three questions were answered incorrectly by the majority of the participants in the pretest. The first question asked about behavior momentum. The second asked participants to identify a helpful strategy with transitions and the third asked about the usefulness of a visual schedule. The fourth question on breaking down a task into small steps was answered correctly by all pre and posttest participants. The posttest mean of 94% reflected the greatest improvement across the modules of more than 37%. The significant increase in scores suggests that the parent training was vital in educating parents, and this module was effective in increasing their knowledge on prevention strategies.

Module 6 Pre and Posttest: Strategies for Problem Behaviors. The sixth and final module reviewed several common problem behaviors, including toilet training, sleep disturbances, and feeding issues. The two questions about toilet training show the participants were not aware of strategies to increase the successful use of the toilet and they believed wearing a diaper at night was acceptable while potty training. The increase in correct answers on the posttest when compared to the pretest suggests these concepts were well explained in the parent

training. The third question asked participants to describe sleep disturbances and was answered correctly by slightly more than half the pretest participants. Almost all answered it correctly in the posttest. One participant shared with the researcher in the post-intervention semi-structured interview that she was unaware their child had sleep disturbances until watching this presentation. The fourth and fifth questions referred to feeding selectivity. The high average of correct answers in the pretest for the last two questions suggests the participants were already knowledgeable about feeding issues. Based on the significant improvement in pre to posttest scores, it appears that the parent training led to the participants' increased learning about how to handle common behavioral problems.

Parent training literature reviewed indicated that parent trainings had positive outcomes for most of the studies. In Solomon et al.'s (2008) study, parents reported improvement in their children's behavior following intervention in PCIT. Parents also reported increased language, play, and social skills in their children with ASD following home-based EIBI (Grindle et al., 2009). Another study noted improved outcomes in children receiving EIBI in a school setting. However, no difference was identified between those children whose parents received a pre-program parent training compared to those who did not (Rivard et al., 2014). Two articles presented case studies in which one parent reported improvement in their child's behavior (Fleming et al., 2017) while the other noted improvement but inconsistently, thereby casting doubt on the efficacy of the parent training (Lee et al., 2007). The current study investigating the efficacy of an online parent training differed from the studies mentioned above in that outcomes were measured directly from pre and post-knowledge tests and pre and posttest surveys rather than relying on parent self-reports of their children's behaviors that could potentially bring into question the reliability and validity of the results. The other studies' data could potentially be

skewed as the participants are invested in seeing an outcome which could threaten the validity of their data. It introduces an element of validity by directly measuring knowledge through pre and posttests, due to the test and retest method. If future studies plan to rely on self-reporting, it should also include triangulation to confirm the results.

RQ4: To what extent does an online parent training intervention have an impact on parents' stress levels?

This parent training's focus was to address problem behaviors and provide parents with the tools to address these at home with their children. Behaviors such as aggression, tantrums, and self-injurious behaviors were addressed in the parent training and these domains reflected lowered stress levels in the APSI post parent training. Domains with increased stress levels after the parent training included communication and social development. These skills were not addressed in the parent training, which could be why parents ranked an increase in these particular domains. Although there was an increase in stress levels in six domains, there was also a reduction in the other seven domains.

The parent training designated one module specifically to sleeping, eating, and toileting issues. Participants did not alter their scores in regard to eating and toileting. However, they did rank sleeping issues as causing increased stress levels after the parent training. During a post-intervention interview, the feedback from one participant suggested she was unaware sleeping issues involved more than not sleeping through the night, and feeding issues was not just selectivity with food. Based on this participant's response, it is possible to conclude that presenting the participants with more information made them realize they had a problem where they thought none existed before. Although negatively affecting the APSI posttest scores, the dissemination of information may have served its purpose in furthering the participants'

knowledge of maladaptive behaviors.

Most parents completed the parent training in less than the six weeks allotted. This time frame could have influenced the lack of improvement in the APSI scores as the parents did not have time to assimilate and put into practice the imparted strategies. Without implementing these strategies consistently over time, they are unlikely to benefit from the parent training's applicable knowledge, thus, not positively affecting the APSI scores. Requiring participants to wait a full week until accessing the next module would allow them time to assimilate each presentation's information. Additionally, a follow-up several months down the road may have been a better way to measure changes in stress levels due to the parent training.

It is important to note the onset of the coronavirus pandemic, which coincided with the implementation of the online training, may have contributed to increased stress levels in parents. It should be assumed that the subsequent social effects of the pandemic, such as school closures and loss of social engagement opportunities, had a major impact on families. More specifically, families with children with ASD may have been presented with added challenges such as suspension of services for their children due to lockdown and potential job loss of the parents that affected their health insurance and child's access to services. Since parent training was already underway at the onset of the pandemic, surveys did not include questions to measure the potential impact of the pandemic on measuring parents' experiences or stress specifically linked to its effects. Therefore, the pandemic could be considered a confounding variable impacting the measurement of parent stress levels as an outcome of training.

The online parent training results indicated an increase in parental knowledge in ABA and behavioral strategies, although these appear to have had little impact in reducing parental stress levels. These findings are similar to those of Solomon et al. (2008), whose research study

noted that, while parents reported their children's behavior as less problematic, therefore, seeing an improvement, they did not indicate reduced stress levels. Rivard et al. (2014) compared the effectiveness of a less intense program for children with a group who received parent training in advance with a group that received parent training at the time intervention began. While no differences were noted in the outcomes between the two groups, both groups reported improvements in their children's behavior, and the authors suggest there is a direct correlation to reduced parental stress levels. Parent participants from Grindle et al.'s (2009) study reported stress levels that fluctuated depending on their child's progress. Approximately one-third of the parents indicated reduced stress levels although no participant registered an increase in stress at the conclusion of the year-long study. Future research should establish a direct correlation between parents' increased knowledge and reduced stress levels to lend credibility to the long-lasting efficacy of the parent training on the child's behavior and the whole family's emotional well-being.

According to the results of this study, domains that were specifically addressed in the online parent training resulted in a decrease in parental stress levels such as tantrums, aggression, self-injurious behavior, and intestinal issues. In contrast, those domains that were not addressed appeared to reflect no difference or an increase in stress levels including social development, communication, felling emotionally close to one's child, and acceptance by society. Parent stress levels do seem to be directly correlated to parents' knowledge of behavioral management. Participants completed the APSI measuring stress levels at the beginning and end of the parent training. Although designed to take place over six-weeks, more than half the participants completed the training in less time, which may have impacted the stress levels measured after the parent training. A follow-up APSI administered three or six months after completion may have

provided an additional source of verification for changes in parent stress levels resulting from the parent training.

Limitations

Although the proposed sample size was of 27 participants, only sixteen people completed the survey. With such a small sample size, the results may not be reflective of the larger population. Additionally, the results may not be significant as the sample size does not meet the ideal sample size determined by the G*power analysis. The qualitative data from the semi-structured parent interview only collected responses from four participants, further reducing the information's significance and generalizability. Another limitation could be when the parent training was completed and how this might have affected the posttest results of the Autism Parenting Stress Index. Only three participants completed the parent training in the allotted six weeks. One participant finished the parent training in just three days, while the rest of the participants took between two and five weeks to complete the parent training. Whether stress levels could have changed significantly over such a short period may impact the APSI posttest results. Another limitation was the lack of information about how the pandemic may have affected the participants during the parent training and their responses on the APSI measuring stress levels. The pandemic and subsequent shutdowns to schools and workplaces that may have impacted the families took place in mid-March after the parent training had begun.

Participants were not asked about prior experience with ABA or previous or current parent training. Previous or ongoing training could have impacted the pre-knowledge and pretest survey scores. Therefore, the validity of the results of the parent training and surveys may have been impacted by not ruling out these potential confounding factors. Finally, the Parent Training Satisfaction Survey and Post-Knowledge Test were administered immediately upon completing

the parent training and may have impacted initial levels of satisfaction and knowledge. The responses may differ if asked one-month or three-months post-intervention and also lend increased validity to the results.

Implications for Practice and Future Research

Although small in sample size, this study reflects parents' willingness to learn and participate in their child's behavior management. Providers who offer services to families should consider requiring parent involvement in sessions and training parents to effectively implement strategies at home with their children. Although recommended by insurance companies, caregiver training is not enforced. Transitioning out of ABA services typically requires parents to exhibit the ability to manage their child's maladaptive and excess behaviors. Involving parents and documenting their participation may result in an increased generalization of behavior strategies. Consistent parent engagement could produce increased positive interaction between caregiver and child and reduced problem behaviors. In addition to providing tools to address behavioral excesses, the parent training may also have created awareness on additional symptoms that may have been unnoticed before completing the parent training. Therefore, another implication for practitioners is creating more awareness for the parents without additional stress.

Future research could consider follow-up evaluations at one month and three months after implementing a training program to evaluate the retention of knowledge, parent confidence in implementing these strategies, and re-administration of the APSI. The stress indicator might have produced different results if the measurements had taken place after a predetermined time. Additionally, the results may also have differed if all participants were required to take the test over the six-weeks rather than take the parent training at their own pace. Another potential study

could compare a purely online asynchronous parent training with an option for a synchronous online parent training allowing participants to ask questions and interact with a professional. This option would compare the efficacy of an online parent training versus a live online parent training identifying whether in-person contact with a provider could affect the parent training results.

The purpose of this online parent training in Spanish was to provide support to Hispanic parents of children with ASD. The study sought to evaluate the efficacy of an online delivery method in improving parents' knowledge of behavior management founded on ABA principles and, as a result, reducing parental stress. The findings supported the effectiveness of an online platform to share information with parents; however, the parent training did not result in the desired effect on parental stress. Overall, this research supports using an online means to effectively deliver information and behavioral strategies to parents of children with ASD.

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Appendix A: Needs Assessment Survey

1. What is your child's diagnosis?
   A. Autism spectrum disorder (ASD)
   B. Developmental delay
   C. Genetic disorder
   D. Sensory impairment with other disabling condition
   E. Other _____

2. At what age was your child diagnosed?
   A. Before 1 year old
   B. 1 year old
   C. 2 years old
   D. 3 years old
   E. 4 years old
   F. 5 years old
   G. 6 years or older

3. Was your child diagnosed with any additional disorders?
   A. Yes
   B. No
   C. I don't know

4. Who diagnosed your child?
   A. Pediatrician
   B. Neurologist
   C. School psychologist
   D. Psychiatrist
   E. Psychologist
   F. Speech/language therapist
   G. Other _____

5. Prior to receiving a diagnosis, did you raise concerns about your child's development or did your pediatrician bring concerns to your attention and suggest further screening?
   A. Doctor suggested screening
   B. We were concerned
   C. Both the doctor and I were concerned

6. You raised your concerns to the doctor because: (check all that apply)
   A. Mom was concerned
   B. Dad was concerned
   C. Other family member was concerned
   D. Friend was concerned
   E. School/teacher was concerned
   F. Other _____

7. What is your preferred language of communication?
   A. English
   B. Spanish
   C. Other _____

8. Did the doctor who diagnosed your child speak to you in your preferred language?
   A. Yes
   B. No
   C. I don't know

9. Did the doctor who diagnosed your child give you information about possible treatments for your child?
   A. Yes
   B. No
   C. I don't know

10. What treatments did the doctor suggest for your child or what specialists did s/he rife you to? (Check all that apply)
   A. Speech therapy
   B. Occupational therapy
   C. Physical therapy
   D. Applied behavior analysis (ABA)
   E. Early intervention
   F. Other _____

11. Does your child receive, or did your child receive, any of the following therapies? (check all that apply)
   A. Speech therapy
   B. Occupational therapy
   C. Physical therapy
   D. Applied behavior analysis (ABA)
   E. Early intervention
   F. Did not receive any therapies
   G. Other _____

12. Did you notice any improvement in your child with any of these therapies?

	Definitely yes	**Probably yes**	**Might or might not**	**Probably not**	**Not applicable**
Speech Therapy					
Occupational Therapy					
Physical Therapy					

	Definitely yes	Probably yes	Might or might not	Probably not	Not applicable
ABA					
Early Intervention					
Other _____					

13. What other services would like (or would you have liked) your child to receive?
_____

14. Do you feel your child received services within an adequate amount of time following diagnosis?
A. Yes
B. No
C. I don't know

15. If you believe there was a delay in receiving treatment, what do you think was the reason? (Check all that apply)
A. Wait list at providers office
B. Insurance did not cover treatment
C. Too expensive
D. Scheduling conflict
E. Transportation issues
F. Therapies not offered in my preferred language
G. My child did not need treatment
H. There was no delay. My child received immediate treatment
I. Other _____
J. I don't know

16. Does your child receive, or has your child ever received, therapies/treatments/services in your home?
A. Yes
B. No
C. I don't know

17. Have you, as a parent, ever participated in your child's therapy sessions?
A. Yes
B. No
C. I don't know
D. I am not the parent

18. Do the therapists openly communicate with you the goals of therapy and share your child's progress on a regular basis?

A. Yes
B. No
C. I don't know

19. Would you be interested in playing a more active role in your child's treatment?
    A. Yes
    B. No
    C. I don't know

20. If a parent training program was available, would you be interested in learning more about:

	Definitely yes	**Probably yes**	**Might or might not**	**Probably not**
Speech Therapy				
Occupational Therapy				
Physical Therapy				
ABA				
Other _____				

21. What signs suggested a concern with your child's development?

22. Did you know what autism was before your child was diagnosed?
    A. Yes
    B. No
    C. I don't know

23. Do you believe your child received a diagnosis in an adequate amount of time or was it delayed?
    A. Adequate amount of time

	Extremely worried	**Very worried**	**Somewhat worried**	**A little worried**	**Not worried at all**	**Not applicable**
Delayed speech						
Poor eye contact						
Tantrum/bad behavior						
Little or no socialization						
Not playing appropriately with toys						
Stimulatory behaviors						
Self-injurious behaviors						
lost language/development regression						
Other _____						

    B. Delayed
    C. I don't know

24. If you believe there was a delay, what factors may have contributed to this delay? (check all that apply)
    A. At the time, we were not concerned with development
    B. Language delay/bilingual issues
    C. Children have tantrums and misbehave
    D. Family members or friends gave me reason to think there was no problem

E. We don’t have health insurance
F. Other _____

25. Is there anything you would like to share regarding your experience during the diagnosis and treatment process of your child?

_____

26. Do you consider yourself to be Hispanic or Latino?
A. Yes
B. No
C. I don’t know

27. Who is completing this survey?
A. Mother
B. Father
C. Other _____

28. Which is the highest level of education you have completed?
A. Did not attend school
B. Less than high school
C. High school degree
D. Some college
E. AA degree
F. Bachelor's degree
G. Graduate degree

29. What is your approximate annual household income?
A. Less than $30,000
B. $30,000-$50,000
C. $50,001-$75,000
D. $75,001-$100,000
E. $100,0001 or more
F. I don’t know

30. Do you have health insurance?
A. Yes
B. No

31. Does your health plan cover autism services?
A. Yes
B. No
C. I don't know

Appendix B: Logic Model

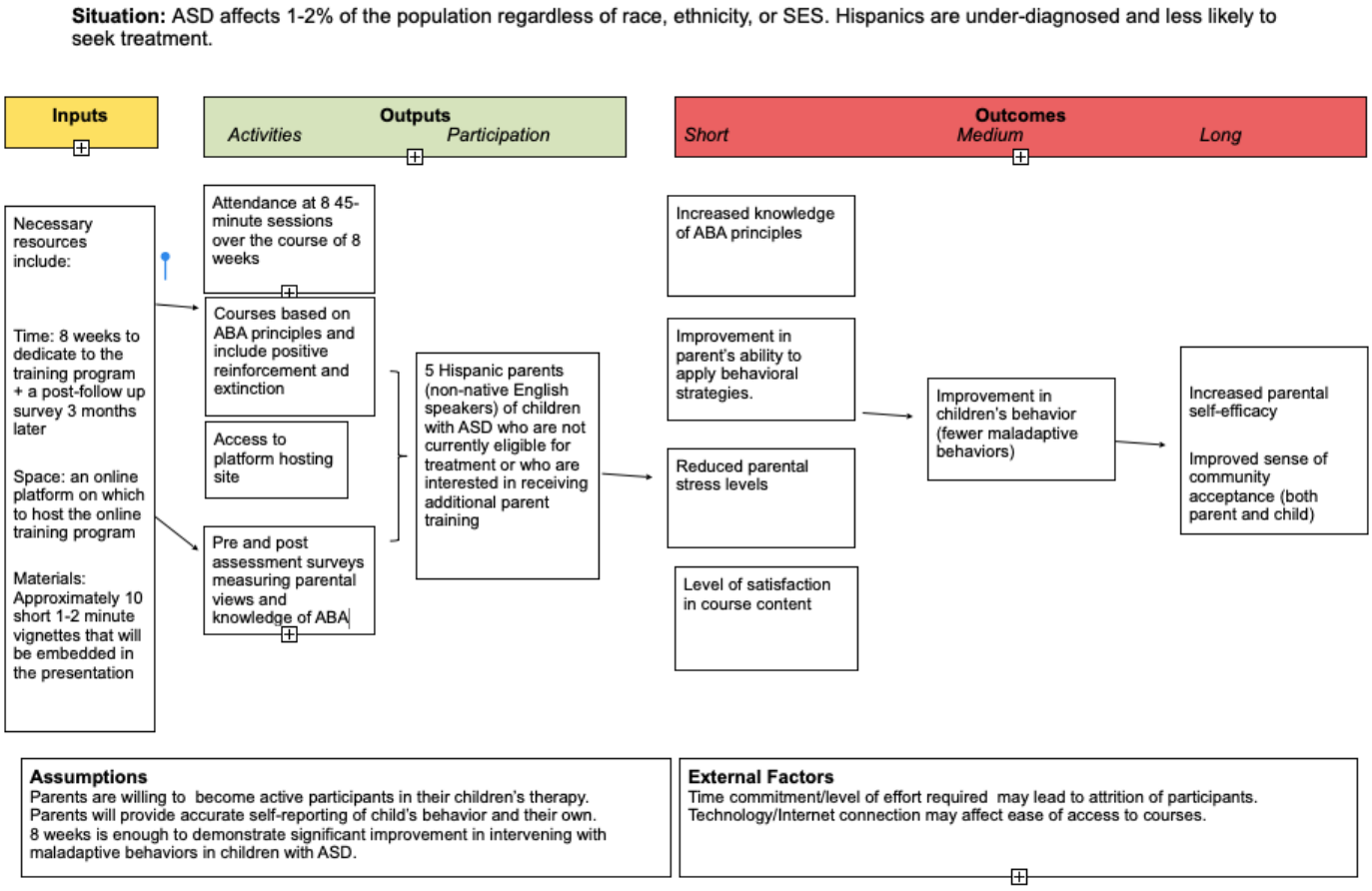
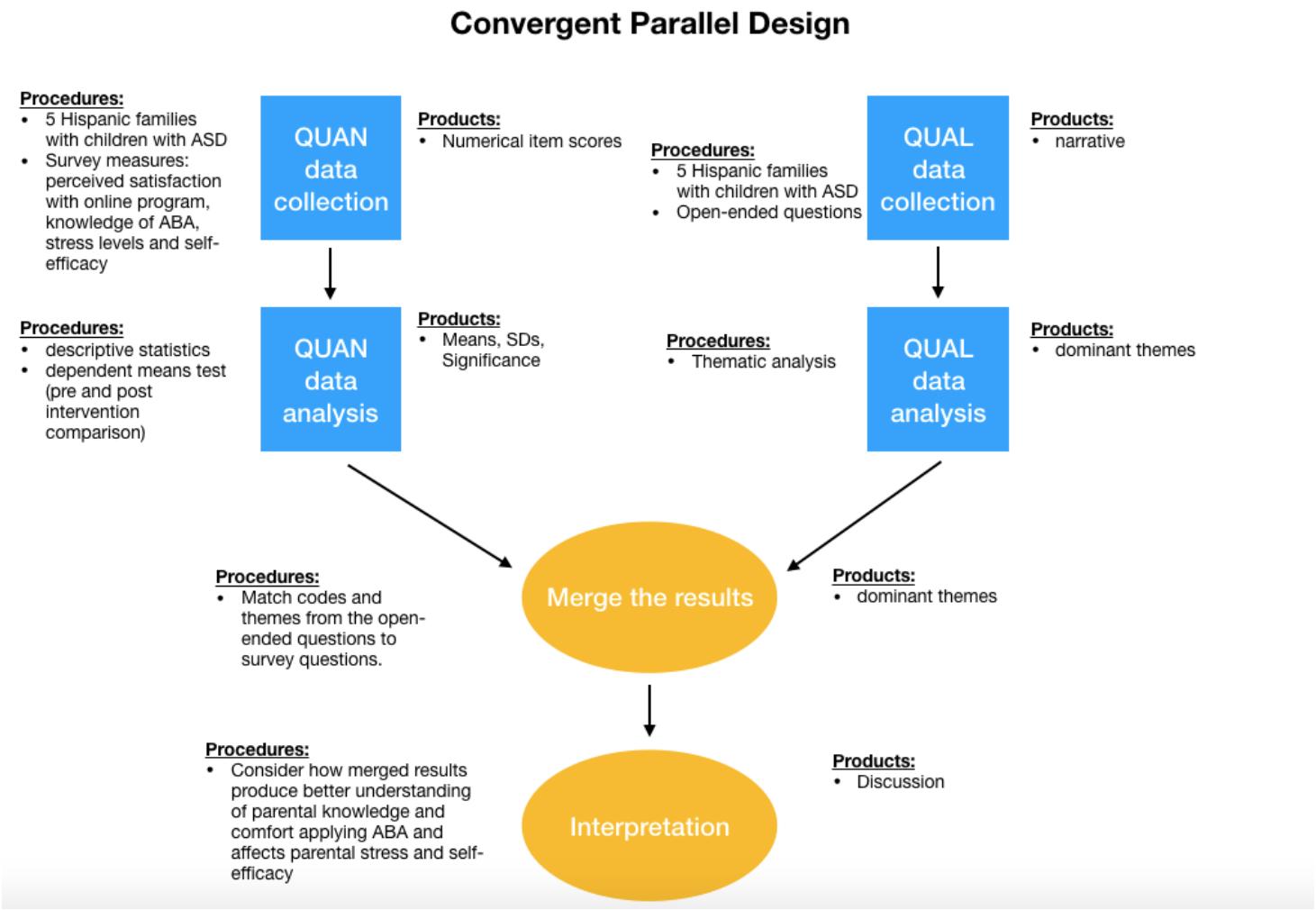


Figure 2. Logic Model Increasing Hispanic Parental Effectiveness as Interventionist with their Children with ASD through an Online Self-Paced Development Course

Appendix C: Convergent Parallel Design



Appendix D: Email/Telephone Survey

(to complete with potential participant prior to enrollment in the study)

Respond to each question to the best of your knowledge.

1. Are you of Hispanic heritage?
2. Is Spanish your primary or native language?
3. Do you have a child with an ASD diagnosis?
4. Do you have access to the internet and an electronic device by which they can view the training courses?

Appendix D: Encuesta a Completar por Teléfono o Correo Electrónico

(to complete with potential participant prior to enrollment in the study)

1. ¿Eres de descendencia Hispana?
2. ¿El Castellano es su idioma preferido?
3. ¿Tiene un hijo con un diagnostico de TEA?
4. ¿Tiene acceso al internet y a un dispositivo electrónico para ver los cursos de entrenamiento?

Appendix E: Consent Form

JOHNS HOPKINS UNIVERSITY
HOMEWOOD INSTITUTIONAL REVIEW BOARD (HIRB)

RESEARCH PARTICIPANT INFORMED CONSENT FORM

Study Title: Evaluation of an Online Parent Training in Spanish to Reduce Stress in Hispanic Parents of Children with Autism Spectrum Disorder

Application No.: HIRB 00010432

Principal Investigator: Tamara Marder, Ph.D, BCBA-D, Associate Professor, Johns Hopkins University School of Education, tmarder1@jhu.edu., (410) 516-9775

You are being asked to join a research study. Participation in this study is voluntary. Even if you decide to join now, you can change your mind later.

1. Research Summary (Key Information):

The information in this section is intended to be an introduction to the study only. Complete details of the study are listed in the sections below. If you are considering participation in the study, the entire document should be discussed with you before you make your final decision. You can ask questions about the study now and at any time in the future.

The purpose of this study is to evaluate the effectiveness of an online parent training program for Hispanic parents of children with autism spectrum disorder (ASD) to improve parental knowledge of applied behavioral analysis (ABA) to address challenging behaviors and thereby decrease parental stress. The online parent training will be offered exclusively in Spanish and will include six weekly modules. Each week, participants will logon to a website to view three or four short videos approximately 5-7 minutes in length. Participants will be asked to answer several short surveys before and after viewing the videos. Participants will spend approximately 30 minutes each week watching the videos and completing the surveys.

In order to participate in this study, subjects should self-identify as Hispanic or consider Spanish to be their native or primary language. Additionally, they should be parents of a child with an autism spectrum disorder diagnosis and have reliable internet access and an electronic device in which they can access the website to view the videos and answer the surveys.

This study may benefit society if the results lead to a better understanding of autism spectrum disorder and the application of behavioral strategies. However, there is no guarantee of any direct benefits from participating in this research study. The risks associated with participation in this study are no greater than those encountered in daily life. There are no costs to the participant.

2. Why is this research being done?

This research is being done to evaluate the effectiveness of an online parent training course to reduce stress in parents of children with autism spectrum disorder (ASD).

The purpose of this research study is to empower parents by providing them with strategies in behavioral principles that they can apply to reduce their children's maladaptive behaviors and improve the quality of life for the whole family.

Hispanic or native Spanish speaking parents of children with autism spectrum disorder (ASD) may join.

3. What will happen if you join this study?

If you agree to be in this study, we will ask you to do the following things:

- Participants will be asked to watch approximately twenty 5-7 minute videos/training sessions through an online platform over the course of six weeks.
- They will also be asked to complete short (ten minutes long) pretest and posttest surveys.
- Participants will be asked to access the online site one time per week and watch the assigned videos and answer the surveys. Expected time of participation is 30 minutes per week.
- The expected duration of the training program is six weeks.

Will research test results be shared with you?

It is uncertain if the research tests will produce results that would be relevant for your clinical care, so we will not share these results with you.

How long will you be in the study?

You will be in this study for six weeks.

4. What are the risks or discomforts of the study?

You may get tired or bored when you are watching the videos or completing questionnaires. You do not have to answer any question you do not want to answer.

There is the risk that information about you may become known to people outside this study.

The risks associated with participation in this study are no greater than those encountered in daily life [or during the performance of routine physical or psychological examinations or tests].

5. Are there benefits to being in the study?

This study may benefit society if the results lead to a better understanding of autism spectrum disorder and the application of behavioral strategies. However, there is no guarantee of any direct benefits from participating in this research study.

6. What are your options if you do not want to be in the study?

Your participation in this study is entirely voluntary. You choose whether to participate. If you decide not to participate, there are no penalties, and you will not lose any benefits to which you would otherwise be entitled.

If you choose to participate in the study, you can stop your participation at any time, without any penalty or loss of benefits. If you want to withdraw from the study, please notify the primary investigator or student investigator and this will end your participation in the study.

If we learn any new information during the study that could affect whether you want to continue participating, we will discuss this information with you.

If you decide not to participate, there are no penalties, and you will not lose any benefits to which you would otherwise be entitled.

7. Will it cost you anything to be in this study?

There are no costs to the participant.

8. Will you be paid if you join this study?

No

9. Can you leave the study early?

- You can agree to be in the study now and change your mind later, without any penalty or loss of benefits.
- If you wish to stop, please tell us right away.
- If you want to withdraw from the study, please contact Penelope Johnson Cuñado at (305) 202-2010, or Dr. Tamara Marder at (410) 516-9775.

10. Why might we take you out of the study early?

You may be taken out of the study if:

- Staying in the study would be harmful.
- You fail to follow instructions.
- The study is cancelled.
- There may be other reasons to take you out of the study that we do not know at this time.

If you are taken out of the study early, Johns Hopkins may use or give out your information that it has already collected if the information is needed for this study or any follow-up activities.

11. How will the confidentiality of your biospecimens and/or data be protected?

Any study records that identify you will be kept confidential to the extent possible by law. The records from your participation may be reviewed by people responsible for making sure that research is done properly, including members of the Johns Hopkins University Homewood Institutional Review Board and officials from government agencies such as the National Institutes of Health and the Office for Human Research Protections. (All of these people are required to keep your identity confidential.) Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records.

A password protected Excel file containing the names and email addresses of target participants that will be created and kept on a secured drive at icloud.com. Data from the surveys will be collected and stored through ProProfs.com or Thinkific.com which are secure websites. Once the survey data is de-identified, it will also be stored in a password-protected Excel file on a secure drive at icloud.com. This file will be permanently deleted once the data have been collected and the dissertation written.

12. What is a Certificate of Confidentiality?

Your study information is protected by a Certificate of Confidentiality. This Certificate allows us, in some cases, to refuse to give out your information even if requested using legal means.

It does not protect information that we have to report by law, such as child abuse or some infectious diseases. The Certificate does not prevent us from disclosing your information if we learn of possible harm to yourself or others, or if you need medical help.

Disclosures that you consent to in this document are not protected. This includes putting research data in the medical record or sharing research data for this study or future research. Disclosures that you make yourself are also not protected.

13. What does a conflict of interest mean to you as a participant in this study?

A researcher may have a future financial interest in this study.

In some situations, the results of this study may lead to a financial gain for the researcher and/or Johns Hopkins University. This financial interest has been reviewed in keeping with Johns Hopkins' policies. It has been approved with certain conditions, which are intended to guard against bias in how the study is conducted, how the results are analyzed, and how participants are protected.
If you have any questions about this financial interest, please talk to Dr. Tamara Marder at (410) 516-9775. This person is a member of the study team, but does not have a financial interest related to the study. You may also call the Office of Policy Coordination 410-361-8667 for more information. The Office of Policy Coordination reviews financial interests of researchers and/or Johns Hopkins.

14. What other things should you know about this research study?
What should you do if you have questions about the study?

Call the principal investigator, Dr. Tamara Marder at (410) 516-9775 or the student investigator, Penelope Johnson Cuñado at (305) 202-2010. If you wish, you may contact the principal investigator by letter. The address is on page one of this consent form. If you cannot reach the principal investigator or wish to talk to someone else, call the IRB office at 410-516-5680.

You can ask questions about this research study now or at any time during the study, by talking to the researcher(s) working with you or by calling Penelope Johnson Cuñado at (305) 202-2010.

If you have questions about your rights as a research participant or feel that you have not been treated fairly, please call the Homewood Institutional Review Board at Johns Hopkins University at (410) 516-6580.

What is the Institutional Review Board (IRB) and how does it protect you?

This study has been reviewed by an Institutional Review Board (IRB), a group of people that reviews human research studies. The IRB can help you if you have questions about your rights as a research participant or if you have other questions, concerns or complaints about this research study. You may contact the IRB at 410-516-6580 or hirb@jhu.edu.

What should you do if you are harmed by taking part in this study?
If you feel that you have been harmed in any way by participating in this study, please call Dr. Tamara Marder at (410) 516-9775. Please also notify the Homewood Institutional Review Board at Johns Hopkins University at (410) 516-6580.

This study does not have any program for compensating or treating you for harm you may suffer as a result of your participation.

Please sign and date your choice below:

YES ☐ _____ _____
Signature of Participant Date

NO ☐ _____ _____
Signature of Participant Date

Appendix E: Formulario de Consentimiento

JOHNS HOPKINS UNIVERSITY
JUNTA DE REVISIÓN INSTITUCIONAL DE HOMEWOOD (HIRB)
FORMULARIO DE CONSENTIMIENTO INFORMADO DEL PARTICIPANTE DE INVESTIGACIÓN

Título del Estudio:	Evaluación de una capacitación para padres en línea en español para reducir el estrés en padres hispanos de niños con trastorno del espectro autista
No. de Aplicación:	HIRB00010432
Investigador Principal:	Tamara Marder, Ph.D, BCBA-D, Profesor Asociado, Johns Hopkins University School of Education, tmarder1@jhu.edu., (410) 516-9775

Se le pide que se una a un estudio de investigación. la participación en este estudio es voluntario. Incluso si decides unirte ahora, puedes cambiar de opinión más adelante.

1. Resumen de la investigación (Información clave):
La información en esta sección está destinada a ser una introducción al estudio solamente. Los detalles completos del estudio se enumeran en las secciones a continuación. Si está considerando participar en el estudio, el documento completo debe ser revisado con usted antes de tomar su decisión final. Puede hacer preguntas sobre el estudio ahora y en cualquier momento en el futuro.

El propósito de este estudio es evaluar la efectividad de un programa de capacitación para padres en línea para padres hispanos de niños con trastorno del espectro autista (TEA) para mejorar el conocimiento de los padres del análisis conductual aplicado (ABA) para abordar conductas desafiantes y, por lo tanto, disminuir el estrés de los padres. La capacitación en línea para padres se ofrecerá exclusivamente en español e incluirá seis módulos semanales. Cada semana, los participantes iniciarán la sesión en un sitio web para ver tres o cuatro videos cortos de aproximadamente 5-7 minutos de duración. Se les pedirá a los participantes que respondan varias encuestas cortas antes y después de ver los videos. Los participantes pasarán aproximadamente 30 minutos cada semana mirando los videos y completando las encuestas.

Para participar en este estudio, deben autoidentificarse como hispanos o considerar que el español es su lengua materna o primaria. Además, deben ser padres de un niño con un diagnóstico de trastorno del espectro autista (TEA) y tener acceso confiable al Internet y un dispositivo electrónico en el que puedan acceder al sitio web para ver los videos y responder a las encuestas.

Este estudio puede beneficiar a la sociedad si los resultados conducen a una mejor comprensión del trastorno del espectro autista y la aplicación de estrategias conductuales. Sin embargo, no hay garantía de ningún beneficio directo por participar en este estudio de investigación. Los riesgos asociados con la participación en este estudio no son mayores que los que se encuentran en la vida diaria. No hay costos para el participante.

2. ¿Por qué se está haciendo esta investigación?
Esta investigación se está realizando para evaluar la efectividad de un curso de capacitación para padres en línea para reducir el estrés en padres de niños con trastorno del espectro autista (TEA).

El propósito de este estudio de investigación es empoderar a los padres al proporcionarles estrategias de principios conductuales que pueden aplicar para reducir los comportamientos de mala adaptación de sus hijos y mejorar la calidad de vida de toda la familia.

Los padres hispanos o nativos de habla hispana de niños con trastorno del espectro autista (TEA) pueden unirse.

3. ¿Qué pasará si te unes a este estudio?
Si acepta participar en este estudio, le pediremos que haga lo siguiente:

- Se les pedirá a los participantes que vean aproximadamente veinte videos de 5-7 minutos / sesiones de capacitación a través de una plataforma en línea durante el transcurso de seis semanas.
- También se les pedirá que completen encuestas cortas (diez minutos de duración) antes y después de la prueba.
- Se les pedirá a los participantes que accedan al sitio en línea una vez por semana, vean los videos asignados y respondan las encuestas. El tiempo esperado de participación es de 30 minutos por semana.
- La duración esperada del programa de capacitación es de seis semanas.

¿Se compartirán con usted los resultados de las pruebas de investigación?
No está claro si las pruebas de investigación producirán resultados que serían relevantes para su atención clínica, por lo que no compartiremos estos resultados con usted.

¿Cuánto tiempo estarás en el estudio?
Estará en este estudio durante seis semanas.

4. ¿Cuáles son los riesgos o las molestias del estudio?
Puede cansarse o aburrirse cuando vea los videos o completa cuestionarios. No tiene que responder ninguna pregunta que no quiera responder.

Existe el riesgo de que la información sobre usted sea conocida por personas ajenas a este estudio.

Los riesgos asociados con la participación en este estudio no son mayores que los que se encuentran en la vida diaria [o durante la realización de exámenes o pruebas físicas o psicológicas de rutina].

5. ¿Hay beneficios de estar en el estudio?
Este estudio puede beneficiar a la sociedad si los resultados conducen a una mejor comprensión del trastorno del espectro autista y la aplicación de estrategias conductuales. Sin embargo, no hay garantía de ningún beneficio directo por participar en este estudio de investigación.

6. ¿Cuáles son sus opciones si no quiere participar en el estudio?
Su participación en este estudio es completamente voluntaria. Tú eliges si participar.
Si decide no participar, no hay sanciones y no perderá ningún beneficio al que de otro modo tendría derecho.

Si elige participar en el estudio, puede detener su participación en cualquier momento, sin penalización ni pérdida de beneficios. Si desea retirarse del estudio, notifique al investigador principal o al investigador estudiantil y esto finalizará su participación en el estudio.
Si durante el estudio conocemos información nueva que pueda afectar si desea continuar participando, discutiremos esta información con usted.

Si decide no participar, no hay sanciones y no perderá ningún beneficio al que de otro modo tendría derecho.

7. ¿Le costará algo participar en este estudio?
No hay costos para el participante.

8. ¿Te pagarán si te unes a este estudio?
No

9. ¿Puedes abandonar el estudio temprano?
• Puede aceptar participar en el estudio ahora y cambiar de opinión más adelante, sin penalización ni pérdida de beneficios.
• Si desea detenerse, infórmenos de inmediato.
• Si desea retirarse del estudio, comuníquese con Penélope Johnson Cuñado al (305) 202-2010, o con la Dra. Tamara Marder al (410) 516-9775.

10. ¿Por qué podríamos sacarlo del estudio temprano?
Es posible que lo retiren del estudio si:
• Permanecer en el estudio sería perjudicial.
• No sigue las instrucciones.
• El estudio se cancela.
• Puede haber otras razones para sacarlo del estudio que no conocemos en este momento.

Si lo sacan del estudio temprano, Johns Hopkins puede usar o divulgar su información que ya ha recopilado si la información es necesaria para este estudio o cualquier actividad de seguimiento.

11. ¿Cómo se protegerá la confidencialidad de sus bioespecificaciones y / o datos?
Cualquier registro de estudio que lo identifique se mantendrá confidencial en la medida de lo posible por ley. Los registros de su participación pueden ser revisados por personas responsables

de asegurarse de que la investigación se realice correctamente, incluidos los miembros de la Junta de Revisión Institucional de Homewood de la Universidad Johns Hopkins y funcionarios de agencias gubernamentales como los Institutos Nacionales de Salud y la Oficina de Protección de Investigación Humana . (Se requiere que todas estas personas mantengan su identidad confidencial). De lo contrario, los registros que lo identifiquen estarán disponibles solo para las personas que trabajan en el estudio, a menos que usted dé permiso a otras personas para que vean los registros.
Un archivo Excel protegido con contraseña que contiene los nombres y las direcciones de correo electrónico de los participantes objetivo que se crearán y se guardarán en una unidad segura en icloud.com. Los datos de las encuestas se recopilarán y almacenarán a través de ProProfs.com o Thinkific.com, que son sitios web seguros. Una vez que se desidentifiquen los datos de la encuesta, también se almacenarán en un archivo Excel protegido con contraseña en un disco seguro en icloud.com. Este archivo se eliminará permanentemente una vez que se hayan recopilado los datos y se haya escrito la disertación.

12. ¿Qué es un certificado de confidencialidad?
La información de su estudio está protegida por un Certificado de confidencialidad. Este Certificado nos permite, en algunos casos, negarnos a dar su información, incluso si se solicita por medios legales.

No protege la información que tenemos que informar por ley, como el abuso infantil o algunas enfermedades infecciosas. El Certificado no impide que divulguemos su información si nos enteramos de posibles daños a usted u otros, o si necesita ayuda médica.

Las divulgaciones que usted acepta en este documento no están protegidas. Esto incluye incluir datos de investigación en el registro médico o compartir datos de investigación para este estudio o investigación futura. Las divulgaciones que realice usted mismo tampoco están protegidas.

13. ¿Qué significa un conflicto de intereses para usted como participante en este estudio?
Un investigador puede tener un interés financiero futuro en este estudio.

En algunas situaciones, los resultados de este estudio pueden conducir a una ganancia financiera para el investigador y / o la Universidad Johns Hopkins. Este interés financiero ha sido revisado de acuerdo con las políticas de Johns Hopkins. Ha sido aprobado con ciertas condiciones, que tienen la intención de proteger contra el sesgo en la forma en que se realiza el estudio, cómo se analizan los resultados y cómo se protege a los participantes.

Si tiene alguna pregunta sobre este interés financiero, hable con la Dra. Tamara Marder al (410) 516-9775. Esta persona es miembro del equipo de estudio, pero no tiene un interés financiero relacionado con el estudio. También puede llamar a la Oficina de Coordinación de Políticas 410-361-8667 para obtener más información. La Oficina de Coordinación de Políticas revisa los intereses financieros de los investigadores y / o Johns Hopkins.

14. ¿Qué otras cosas debes saber sobre este estudio de investigación?

Llame al investigador principal, Dr. Tamara Marder al (410) 516-9775 o al investigador estudiantil, Penélope Johnson Cuñado al (305) 202-2010. Si lo desea, puede comunicarse con el investigador principal por carta. La dirección se encuentra en la página uno de este formulario de consentimiento. Si no puede comunicarse con el investigador principal o desea hablar con otra persona, llame a la oficina del IRB al 410-516-5680.

Puede hacer preguntas sobre este estudio de investigación ahora o en cualquier momento durante el estudio, hablando con los investigadores que trabajan con usted o llamando a Penélope Johnson Cuñado al (305) 202-2010.
Si tiene preguntas sobre sus derechos como participante de la investigación o siente que no ha recibido un trato justo, llame a la Junta de Revisión Institucional de Homewood en la Universidad Johns Hopkins al (410) 516-6580.

¿Qué es la Junta de Revisión Institucional (IRB) y cómo lo protege?
Este estudio ha sido revisado por una Junta de Revisión Institucional (IRB), un grupo de personas que revisa los estudios de investigación en humanos. El IRB puede ayudarlo si tiene preguntas sobre sus derechos como participante de la investigación o si tiene otras preguntas, inquietudes o quejas sobre este estudio de investigación. Puede comunicarse con el IRB al 410-516-6580 o hirb@jhu.edu.

¿Qué debe hacer si se ve perjudicado por participar en este estudio?
Si siente que ha sufrido algún daño al participar en este estudio, llame a la Dra. Tamara Marder al (410) 516-9775. Notifique también a la Junta de Revisión Institucional de Homewood en la Universidad Johns Hopkins al (410) 516-6580.
Este estudio no tiene ningún programa para compensarlo o tratarlo por el daño que pueda sufrir como resultado de su participación.

Firme y feche su elección a continuación:

SÍ □ _____ _____
Firma del participante Fecha

NO □ _____ _____
Firma del participante Fecha

Appendix F: Demographic Questionnaire

Please read each question and select the option that best reflects your response.

1. Who is answering this survey?
   A. Mother
   B. Father
   C. Other _____

2. What is the age of your child?
   A. 1 to 2 years old
   B. 3-4 years old
   C. 5- 7 years old
   D. 8 to 12 years old
   E. 13-18 years old
   F. 19 years or older

3. What is your child's gender?
   A. Male
   B. Female

4. Do you have other children?
   A. Yes
   B. No

5. If yes, how many in total?
   A. 2
   B. 3
   C. 4
   D. 5 or more

6. What is your child's diagnosis?
   A. ASD
   B. Other _____

7. At what age was your child diagnosed?
   A. 1 year old
   B. 2 years old
   C. 3 years old

D. 4 years old
A. 5 years old
B. 6 or older

8. What is your marital status?
   A. Married
   B. Divorced/Separated
   C. Widowed
   D. Never married
   E. Other _____

9. What is the highest level of education completed by the person filling out this form?
   A. Some high school
   B. High school diploma
   C. Some college
   D. Associates degree
   E. Bachelor's degree
   F. Master's degree
   G. Doctoral degree

10. What is the occupation of the person completing this form? _____

11. What is the annual household income?
   A. <$20,000
   B. $20,000-$34,999
   C. $35,000- $49,999
   D. $50,000-$64,999
   E. $65,000-$79,999
   F. $80,000=$94,999
   G. >$95,000

12. What is your ethnic origin?
   A. Hispanic
   B. White, not of Hispanic origin
   C. Black, not of Hispanic origin
   D. Other _____

13. How do you rate your relationship with your child?
   A. I feel very satisfied with my relationship with my child

B. I feel adequately satisfied with the relationship with my child
C. I feel somewhat satisfied with the relationship with my child
D. I am not satisfied with the relationship with my child because _____

14.How do you rate the severity of your child's disorder?

	Very severe	**Somewhat severe**	**Moderate**	**Mild**	**No issues at all**
Communication					
Social Skills					
Self-help Skills					
Motor Skills					
Repetitive/Stereotypical behaviors					
Disruptive Behaviors					
Other _____					
Other _____					

15. How do you rate your child's maladaptive behaviors?

	Never	**Rarely (1x per month)**	**Sometimes (1x per week)**	**Frequently (3x or more per week)**	**Consistently (every day/multiple times a day)**
Is verbally aggressive towards others.					
Takes property from others without permission.					
Destroys or vandalizes the property of others					

Is physically aggressive towards others					
Is physically aggressive towards self (Self-injurious behavior)					
Is defiant toward authority					
Other _____					

16. Any other concerns with your child that you would like to share? _____

_____

Appendix F: Encuesta Demográfica

Por favor lea cada pregunta y seleccione la mejor respuesta.

1. ¿Quién esta respondiendo a esta encuesta?
   A. Madre
   B. Padre
   C. Otro _____

2. ¿Qué edad tiene su hijo?
   A. 1 a 2 años
   B. 3 a 4 años
   C. 5 a 7 años
   D. 8 a12 años
   E. 13 a 18 años
   F. 19 años o mas

3. ¿Cuál es el sexo de su hijo?
   A. Mujer
   B. Hombre

4. ¿Tiene más hijos?
   A. Si
   B. No

5. Si la respuesta anterior fue sí, cuántos hijos tiene en total?
   A. 2
   B. 3
   C. 4
   D. 5 o mas

6. ¿Qué diagnostico tiene su hijo?
   A. TEA (Trastorno del Espectro Autista)
   B. Otro _____

7. ¿A qué edad fue diagnosticado su hijo?
   A. Con 1 año
   B. 2 años
   C. 3 años

D. 4 años
E. 5 años
F. 6 años o mas

8. ¿Cuál es su estado civil?
   A. Casado
   B. Divorciado/Separado
   C. Viudo/a
   D. Nunca Casado
   E. Otro _____

9. ¿Cual es el nivel mas alto de education que ha completado?
   A. Algo de secundario
   B. Terminó/Graduó de secundario
   C. Algo de universidad
   D. Grado de Asociado
   E. Grado de Bachiller
   F. Grado de Maestría
   G. Grado de Doctorado

10. ¿Cuál es la profesión/empleo de la persona que esta completando esta encuesta?
    _____

11. ¿Que son los ingresos anuales de la familia?
   A. <$20,000
   B. $20,000-$34,999
   C. $35,000- $49,999
   D. $50,000-$64,999
   E. $65,000-$79,999
   F. $80,000-$94,999
   G. >$95,000

12. ¿Cuál es su origen etnico?
   A. Hispano
   B. Blanco, no de origen Hispano
   C. Negro, no de origen Hispano
   D. Otro _____

13. ¿Como califica su relación con su hijo?

A. Me siento muy satisfecha en mi relation con mi hijo
B. Me siento algo satisfecho en mi relación con mi hijo
C. Me siento poco satisfecho en mi relación con mi hijo
D. Me siento insatisfecho en mi relación con mi hijo

14.¿Cómo califica la severidad de los síntomas de su hijo?

	Muy severo	**Algo severo**	**Moderado**	**Leve**	**Ningún problema**
Comunicación					
Habilidades Sociales					
Habilidades de Auto-Ayuda					
Habilidades Motoras					
Conductas Repetitivas/Estereotipías					
Conductas Disruptivas					
Otro _____					
Otro _____					

15. ¿Cómo califica las conductas problemáticas de su hijo?

	Nunca	**Raramente (1 vez al mes)**	**Alguna vez (1 vez por semana)**	**Frecuentemente (Mas de 3 veces por semana)**	**Consistentemente (todos los días/varias veces al día)**
Es verbalmente agresivo con los demás					
Le quita propiedad a los					

demás sin permiso					
Destruye o vandaliza la propiedad de los demás					
Es fisicamente agresivo con los demás					
Es fisicamente agresivo con sigo mismo (se auto-agrede)					
Es desfiante					
Oro _____					

16. ¿Tiene alguna otra preocupación con su hijo que quiere compartir?

_____

Appendix G: Autism Parenting Stress Index (APSI)

Please rate the following aspects of your child's health according to how much stress it causes you and your family by placing an X in the box that best describes your situation.

	Stress Ratings				
	Not stressed	Sometimes creates stress	Often creates stress	Very stressful on a daily basis	So stressful sometimes we feel we can't cope
Your child's social development					
Your child's ability to communicate					
Tantrums/meltdowns					
Aggressive behavior (siblings, peers)					
Self-Injurious behavior					
Difficulty in making transitions from one activity to another					
Sleep problems					
Your child's diet					
Bowel problems (diarrhea, constipation)					
Potty Training					
Not feeling close to your child					
Concern for the future of your child being accepted by others					
Concern for the future of your child living independently					

Adapted from Silva, L. M. T., & Schalock, M. . (2012) . *Autism Parenting Stress Index* (APSI). Measurement Instrument Database for the Social Science. Retrieved from www.midss.ie

Appendix G: Indice de Estrés de Autismo para Padres

Por favor califique los siguientes aspectos de la salud de su hijo de acuerdo a cuanto estrés les causa a usted y a su familia. Ponga una X en la casilla que mejor describe su situación.

	Calificación de Estrés				
	No causa estrés	Algunas veces causa estrés	A menudo causa estrés	Muy estresante de manera diaria	Tan estresante que sentimos que no podemos soportarlo
El desarrollo social de su hijo					
La habilidad de su hijo de poder comunicar					
Rabietas/Berrinches					
Conducta agresiva (con hermanos, amigos, pares)					
Conducta auto-agresiva					
Dificultad en transicionar de una activada a otra					
Trastorno de sueño					
Dieta de su hijo					
Problemas de intestino (diarrhea, constipación)					
Entrenamiento de Esfínter					
No se siente emocionalmente cerca de su hijo					
Preocupado por el future de su hijo y se será aceptado por los demás					
Preocupado por el futuro de su hijo y si podrá vivir independientemente					

Adaptado de Silva, L. M. T., & Schalock, M. . (2012) . Autism Parenting Stress Index (APSI). Measurement Instrument Database for the Social Science. Retrieved from www.midss.ie

Appendix H: Pre and Post-Knowledge Test

Pre and Post Knowledge Test

1. Symptoms of autism are usually the same for every individual.
   A. True
   B. False

2. Every behavior has a function (a reason).
   A. True
   B. False

3. Delivering Positive Reinforcement means that
   A. a reward will be given and good behavior will happen more frequently
   B. a reward will be given and bad behavior will happen more frequently
   C. a reward will be given and any behavior will happen more frequently
   D. a punishment will be given and behaviors will improve

4. 3-step prompting is
   A. Counting 1, 2, 3
   B. Breaking down a skill into three parts
   C. Providing help by using three different prompts
   D. Giving a child three chances to get it right

5. Prevention strategies include the following EXCEPT
   A. Positive Reinforcement
   B. Breaking down a task into smaller steps
   C. Avoiding a situation that causes problem behavior
   D. Using a timer

6. Approximately _____% of individuals with ASD are affected by sleep disturbances.
   A. 20%
   B. 40%
   C. 60%
   D. 80%

Appendix H: Pre y Post Examen de Conocimiento

Pre y Post Examen de Conocimiento

1. Síntomas de autism suelen ser los mismos para todos los afectados.
   A. Verdadero
   B. Falso

2. Cada conducta tiene una función (una causa).
   A. Verdadero
   B. Falso

3. Entregar reforzamiento positivo significa que
   A. una recompensa se entrega y la conducta deseable sucederá con mas frecuencia
   B. una recompensa se entrega y la conducta indeseable sucederá con mas frecuencia
   C. una recompensa se entrega y cualquier conducta que la sigue sucederá con mas frecuencia
   D. un castigo se entrega y la conducta mejorará

4. El procedimiento de ayudas de 3 pasos consiste en
   A. Contar 1, 2, 3
   B. Romper una habilidad en 3 pasos
   C. Asistir en completar una tarea dando 3 ayudas diferentes
   D. Dar un niño 3 oportunidades para completar la tarea correctamente

5. Estrategias de prevención incluyen todas las siguientes MENOS
   A. Reforzamiento positivo
   B. Romper una tarea en pasos pequeños
   C. Evitar cualquier situación que cause problemas conductuales
   D. Usar un reloj automático

6. Aproximadamente _____% de individuos con TEA son afectados por trastornos de sueño.
   A. 20%
   B. 40%
   C. 60%
   D. 80%

Appendix I: Pre and Posttest Module 1: ABA, Behavior, & Antecedents

Read each question and select the response that best answers the question.

1. There are no treatments for autism?
   A. True
   B. False

2. Which of the following are considered evidence-based practices?
   A. GFCF diet
   B. Vitamin regimen
   C. ABA
   D. Swimming with the dolphins

3. ABA is best described as:
   A. A therapy only suitable for younger children in early intervention
   B. A relatively new treatment for children on the spectrum
   C. a therapy based on the science of behavior
   D. a therapy that requires a lot of hours a week to be effective

4. It is recommended that the behavior be described by
   A. How you feel
   B. What can be personally observed and measured
   C. What other people think it is
   D. General and vague terms

5. An antecedent is a term used to describe
   A. What happens before the behavior
   B. The behavior
   C. What happens after the behavior
   D. the function of the behavior

POSTTEST

Based on the information shared in this presentation, how do you feel about understanding ABA and what evidence based treatment is?

Very comfortable	Somewhat comfortable	A little comfortable	Not at all comfortable	I don't know

Appendix I: Prueba Pre y Post-Modulo 1: ABA, Conducta, & Antecedentes

Lea cada pregunta y seleccione la respuesta que mejor corresponde.

1. No hay tratamientos para autismo?
   A. True
   B. False

2. ¿Cuál de las siguientes se considera un tratamiento basado en evidencia?
   A. Dieta libre de caseina y gluten
   B. Regimen de vitaminas
   C. ABA (análisis de conducta aplicada)
   D. Nadar con delfines

3. La mejor descripción de ABA es:
   A. Una terapia sol para niños chiquitos como intervención temprana
   B. Un tratamiento reciente para niños diagnosticado dentro del espectro autista
   C. Una terapia basada en la ciencia de la conducta
   D. Una terrapin que requiere muchas horas (ser intensivo) para ser eficaz

4. Se recomienda que la conducta debe ser descrita por
   A. Como uno se siente
   B. Si puede ser personalmente observado y medido
   C. Que otras personas piensan que es
   D. En términos generales

5. El termino 'antecedente' se usa para describir:
   A. Que sucede antes de la conducta
   B. La conducta
   C. Que sucede antes de la consecuencia
   D. Que sucede después de la conducta

POST PRUEBA

Basado en la información compartida en las presentaciones de este modulo, como calificaría su nivel de comodidad o su capacidad de identificar la conducta y los antecedentes de la conducta de su hijo?

Muy alto	***Bueno***	***Regular***	***No entendí***	***No se***

Appendix J: Pre and Posttest Module 2: Functions of Behavior

Read each question and select the response that best answers the question.

1. How many functions of behavior are there?
   A. 2
   B. 3
   C. 4
   D. 5

2. Which of the following is not a function of a behavior?
   A. Seeking attention
   B. Wanting access to a tangible
   C. Being afraid
   D. Wanting to escape
   E. Seeking sensory input

3. Before determining the function of a behavior, you should do all of these except
   A. Define the behavior
   B. Directly observe the behavior and fill out an ABC form
   C. Change the child's typical routine and see what happens
   D. Interview key people to try to detect a pattern in the behavior

4. Which of the following is not a true statement?
   A. We should know the function before intervening in the behavior
   B. Behaviors do not occur in a vacuum
   C. Typically, there is a stimulus or factor that causes a person to behave in a certain way
   D. It is not necessary to know the function of a behavior to intervene

5. When the alarm goes on in the morning, Sam throws it across the room. Mom comes in to tell him to get up and Sam yells at mom to leave him alone. What is the most likely function of Sam's behavior?
   A. Attention
   B. Escape
   C. Sensory
   D. Tired

POSTTEST

Based on the information shared in this presentation, how do you feel about identifying the functions of behavior?

Very comfortable	***Somewhat comfortable***	***A little comfortable***	***Not at all comfortable***	***I don't know***

Appendix J: Prueba Post-Modulo Modulo 2: Funciones de la Conducta

Lea cada pregunta y seleccione la raspiest que mejor corresponde.

1. ¿Cuántas funciones de conducta existen?
   A. 2
   B. 3
   C. 4
   D. 5

2. ¿Cuál de las siguientes no es una conducta?
   A. Buscando atención
   B. Acceso a un tangible/objeto
   C. Miedo
   D. Queriendo escapar
   E. Sensorial

3. Antes de determina la función de la conducta, deberían hacer todo MENOS
   A. Definir la conducta
   B. Observar directamente la conducta y completar las hojas de ACC
   C. Cambiar la rutina típica de los niños a ver que sucede
   D. Entrevistar a personas claves para detectar un patrón en la conducta

4. ¿Cuál de las siguientes no es una frase verdadera?
   A. Debemos conocer la función antes de intervenir y cambiarla
   B. Las conductas no suceden en un vacío
   C. Normalmente hay algún factor o estimulo que causa que la persona se comporte de tal manera.
   D. No es necesario saber la function de la conducta para intervenir y cambiarla

5. Cuando suena el despertador por las mañanas, Sam tira el despertador al suelo. Su madre entree en en cuarto para rogar que se levante. Sam grita a su madre que le deje en paz. ¿Cuál es la función más probable de la conducta de Sam?
   A. Atención
   B. Escape
   C. Sensorial
   D. Cansado

POST PREUBA

¿Basada en la información compartida en esta presentación, como calificaría su nivel de capacidad para identificar funciones de conducta?

Muy alto	***Bueno***	***Regular***	***No entendí***	***No se***

Appendix K: Pre and Posttest Module 3: Consequences

Read each question and select the response that best answers the question.

1. Positive reinforcement is
   A. a reward which makes the child happy
   B. a reward with increases the child's behavior in the future
   C. a reward which will make the child behave well in the future
   D. the removal of a reward which makes the parent happy

2. For positive reinforcement to be most effective:
   A. It should be delivered by someone unknown to the child
   B. It should be delivered immediately
   C. It should be delivered without emotion
   D. It should be delivered infrequently

3. Which of the following statements about positive reinforcement is true?
   A. Positive Reinforcement can reward an undesirable behavior
   B. Positive reinforcement is saying "Good job" every time your child does something right
   C. Positive reinforcement does not have to be delivered right after the behavior
   D. Positive reinforcement will eliminate your child's misbehavior

4. Which of the following is NOT an example of positive reinforcement?
   A. Give a child a high-five for a job well done
   B. Receive a bonus for completing a project ahead of the deadline
   C. Watch your favorite Netflix series after doing your homework
   D. Scratch an itchy mosquito bite

5. How can I find out what is a reinforcer for my child? All of these answers EXCEPT
   A. By asking the child
   B. By asking others who know your child
   C. By observing your child
   D. Using other children's reinforcers- most kids have the same reinforcers

POSTTEST

Based on the information shared in this presentation, how do you feel about applying positive reinforcement?

Very comfortable	***Somewhat comfortable***	***A little comfortable***	***Not at all comfortable***	***I don't know***

Appendix K: Prueba Pre y Post Modulo3: Consecuencias

Lea cada pregunta y seleccione la raspiest que mejor corresponde.

1. Reforzamiento positivo es
   A. una recompensa que hace al niño feliz
   B. una recompensa que aumenta la probabilidad de que el niño haga esa conducta en el futuro
   C. una recompense que hará que el niño se comportará bien en el futuro
   D. retirar una recompensa que hará a los padres felices

2. Para que reforzamiento positive sea mas eficaz:
   A. Debe ser entregado por alguien desconocido por el niño
   B. Debe ser entregado inmediatamente
   C. Debe ser entregado sin emoción
   D. Debe ser entregado con poca frecuencia

3. ¿Cuál de las siguientes frase sobre reforzamiento positivo es verdadera?
   A. Reforzamiento positivo puede reforzar una conducta indeseada
   B. Reforzamiento positivo es decir "Buen trabajo" cada vez que su hijo hace una tarea bien
   C. Reforzamiento positivo no tiene que ser entregada inmediatamente después de la conducta
   D. Reforzamiento positivo eliminará las conductas problematical de su hijo

4. ¿Cuál de las siguientes NO es un ejemplo de reforzamiento positivo?
   A. Dar un niño un abrazo por un trabajo bien hecho
   B. Recibir un bono por completar un proyecto antes de tiempo
   C. Ver un programa favorito de Netflix antes de irse a la cama
   D. Arrascar una picadura de mosquito que pica

5. ¿Cómo puede determinar los reforzadores de mi hijo?De las siguientes maneras MENOS
   A. Preguntando a su hijo
   B. Preguntando a otras personas que conocen a su hijo
   C. Observando su hijo
   D. Usando los reforzadores de otros niños ya que la mayoría tienen los mismos reforzadores

POST PRUEBA

¿Basada en la información compartida en esta presentación, como calificaría su nivel de capacidad para implementar reforzamiento positivo con su hijo?

Muy alto	***Bueno***	***Regular***	***No entendí***	***No se***

Appendix L: Pre and Posttest Module 4: Prompts

Read each question and select the response that best answers the question.

1. The only prompts given to help a person follow through or complete a task are physical and verbal prompts?
   A. True
   B. False

2. The best way to provide a prompt is from
   A. Most to least prompting
   B. Least to most prompting
   C. Any prompting is fine as long as the child completes the task
   D. The prompt given depends on the situation

3. How much time should we give the person to comply with a request before providing a prompt?
   A. Immediately
   B. 1-3 seconds
   C. 5-7 seconds
   D. 10-15 seconds

4. 3 step prompting uses which of the following prompts EXCEPT?
   A. verbal prompts
   B. physical prompt
   C. positional prompt
   D. imitative prompt

5. When is the best moment to use 3-step prompting?
   A. When the child is crying
   B. When you ask the child to perform a task
   C. When the behavior requires a verbal response
   D. When the child refuses to follow instructions.

POSTTEST

Based on the information shared in this presentation, how do you feel about implementing prompts to encourage your child to follow an instruction or complete a task?

Very comfortable	***Somewhat comfortable***	***A little comfortable***	***Not at all comfortable***	***I don't know***

Appendix L: Prueba Pre y Post Module 4: Ayudas

Lea cada pregunta y seleccione la raspiest que mejor corresponde.

1. Las únicas ayudas que se dan para ayudar a alguien seguir una instrucción o completar una tarea son ayudas físicas o verbales.
   A. Verdadero
   B. Falso

2. La mejor manera de ofrecer ayudas es de:
   A. Máxima ayuda a mínima ayuda
   B. Mínima ayuda a máxima ayuda
   C. Cualquier ayuda mientras que el niño completa la tarea
   D. La ayuda que se entrega depende de la situación

3. ¿Cuánto tiempo deberías dar al individua para completar la tarea antes de ofrecer una ayuda?
   A. Inmediatamente
   B. 1-3 segundos
   C. 5-7 segundos
   D. 10-15 segundos

4. El procedimiento de ayuda de 3 pasos usa las siguientes ayudas MENOS
   A. ayudas verbales
   B. ayudas físicas
   C. ayudas de posicionamiento
   D. ayudas imitativas

5. ¿Cuál es el mejor momento de usar el procedimiento de ayudas de 3 pasos?
   A. Cuando el niño esta llorando
   B. Cuando preguntas al niño de completar una tarea
   C. Cuando la conducta requiere una respuesta verbal
   D. Cuando el niño se niega a seguir la instrucción

POST PRUEBA

¿Basada en la información compartida en esta presentación, como calificaría su nivel de capacidad para implementar ayudas con su hijo para que complete una tarea o siga una instrucción?

Muy alto	***Bueno***	***Regular***	***No entendí***	***No se***

Appendix M: Pre and Posttest Module 5: Prevention Strategies

Read each question and select the response that best answers the question.

1. Which of the following is more likely to result in a positive response?
   A. Make your bed
   B. "Give me a hug" followed by "make your bed"
   C. "Give me a hug", "Let's play a game", "Get your doll". "make your bed"
   D. None of these

2. A useful strategy to help with transition is
   A. use a timer
   B. don't change the activity- avoid transition altogether
   C. change the schedule so the child is not expecting the transition
   D. use a happy tone of voice

3. A visual schedule would be useful for a child for the following reasons EXCEPT
   A. to keep track of any changes in daily activities
   B. to help establish routines
   C. to participate in decisions regarding their daily schedule
   D. so that the parent can keep repeating the activities that are on the schedule

4. Breaking down a task into smaller, easier steps is a prevention strategy
   A. True
   B. False

5. Examples of prevention strategies are all of the following EXCEPT
   A. avoiding a situation
   B. prompts
   C. changing the order of events
   D. identifying triggers and predicting symptoms

POSTTEST

Based on the information shared in this presentation, how do you feel about implementing prevention strategies to encourage your child to follow an instruction or complete a task?

Very comfortable	***Somewhat comfortable***	***A little comfortable***	***Not at all comfortable***	***I don't know***

Appendix M: Prueba Pre y Post Modulo 5: Estrategias de Prevención

Lea cada pregunta y seleccione la raspiest que mejor corresponde.

1. ¿Cuál de las siguientes frases es mas probable de provocar un resultado positivo?
   A. "Haz tu cama"
   B. "Dame un abrazo" seguido por "Haz tu cama"
   C. "Dame un abrazo", 'Vamos a jugar", "Trae tu muñeca" seguido por "Haz tu cama"
   D. Ninguna de estas

2. Una estrategia util para ayudar con transiciones es
   A. usar un reloj automático
   B. no cambiar la actividad- evitar la transición
   C. cambiar la agenda para que el niño no espere la transición
   D. usar un tono de voz positivo y feliz

3. Una agenda visual seria util para un niño por las siguientes razones MENOS
   A. para marcar cambios en la agenda de activates diarias
   B. para ayudar para establecer una rutina
   C. para participar en decisiones sobre su agenda diaria
   D. para que el padre pueda repetir las actividades que están en la agenda

4. Rompiendo una tarea en partes mas sencillas es una estrategia preventiva.
   A. Verdadero
   B. Falso

5. Ejemplos de estrategias de prevención incluyen todas las siguientes MENOS
   A. evitar una situación
   B. ayudas
   C. cambiar el orden de eventos
   D. identificar situaciones que pueden provocar una conducta o síntomas que predicen una conducta

POST PRUEBA

¿Basada en la información compartida en esta presentación, como calificaría su nivel de capacidad para implementar estrategias de prevención con su hijo?

Muy alto	***Bueno***	***Regular***	***No entendí***	***No se***

Appendix N: Pre and Posttest Module 6: Strategies for Problem Behaviors

Read each question and select the response that best answers the question.

1. Some methods to increase successful elimination on the potty include all of these EXCEPT
   A. Modeling the use of the toilet
   B. Have your child sit on the toilet until they urinate
   C. Change the bathroom in the bathroom and show discards go into the toilet
   D. Have your child drink lots of liquids 30 minutes to 1 hour before taking them to the toilet

2. Which of the following statements is not true? Using a diaper
   A. Will tell your child that it is ok to urinate or have a bowel movement
   B. Is only acceptable when your child is sleeping.
   C. Makes it harder for the child to feel wet or dirty.
   D. Makes it harder for the child to go to the bathroom on his/her own.

3. Sleep disturbances are defined as all of these except
   A. Difficulty falling asleep
   B. Insisting on a night light
   C. Difficulty staying asleep
   D. Waking up too early

4. Which of these should you do?
   A. Hide vegetables in the food
   B. Say one more and then keep spooning food as long as the child is not complaining
   C. Force your child to remain seated throughout the meal
   D. Be patient

5. Withholding food until the child eats is the recommended way to get your child with ASD to eat.
   A. True
   B. False

POSTTEST

Based on the information shared in this presentation, how do you feel about addressing problem behavior issues with your child regarding potty training, eating selectivity, and sleep disturbances?

Very comfortable	***Somewhat comfortable***	***A little comfortable***	***Not at all comfortable***	***I don't know***

Appendix N: Prueba Pre y Post Modulo 6: Estrategias para Conductas Problemáticas

Lea cada pregunta y seleccione la respuesta que mejor corresponde.

1. Algunos métodos para aumentar la probabilidad de que su hijo evacue en el inodoro incluye las siguientes MENOS
   A. Modelar el uso del inodoro
   B. Dejar que si hijo se siente en el inodoro hasta que vacíe la vejiga
   C. Cambiar los panales en el bank y ensnare que los rests van dentro del inodoro
   D. Dar a su hijo mucho liquido 30 minutos -1 hora antes de llevarlo al baño

2. ¿Cuál de las siguientes frases no es verdadera?
   A. Decir a su hijo que esta bien orinar o hacer caca en el panal
   B. Is only acceptable when your child is sleeping.
   C. Makes it harder for the child to feel wet or dirty.
   D. Makes it harder for the child to go to the bathroom on his/her own.

3. Trastorno de Sueno se caracteriza por todas MENOS
   A. Dificultad durmiéndose
   B. Insistiendo en una luz nocturna
   C. Dificultad quedándose dormido
   D. Despertándose demasiado temprano

4. ¿Cuál de las siguientes debería hacer?
   A. Esconder verduras en la comida
   B. Decir "solo una cucharada mas" y segue dando mas comida mientras el niño no reclame.
   C. Obligar a su hijo a permanecer sentado durante la comida
   D. Ser paciente y mantener la calma

5. No darle comida a su hijo hasta pie coma lo que le has presentado es la manera recomendada para conseguir al niño con TEA comer bien.
   A. Verdadero
   B. Falso

POST PRUEBA

¿Basada en la información compartida en esta presentación, como calificaría su nivel de capacidad para implementar estrategias para mejorar trastornos de sueno, selectividad de comida, o control de esfínter?

Muy alto	***Bueno***	***Regular***	***No entendí***	***No se***

Appendix O: Online Access Survey

Read each question and select the response that best answers the question.

	Very easy	***Somewhat easy***	***Neither easy nor difficult***	***Somewhat difficult***	***Very difficult***
1. How easy was it to log on to the website?					
2. How easy was it to use your device of choice to view the presentation?					
3. What device did you use?_____ ___					

	No difficulty at all	***A little difficulty***	***Some difficulty***	***Quite difficult***	***Very difficult***
4. Did you experience any difficulty viewing or participating in the presentation, videos, or pre and posttests?					

.

5 If you had difficulty, what area caused the problem? Select all that apply.

A. Pretest
B. Video presentations
C. Embedded videos
D. Active responses
E. Posttest
F. Other _____

Please share any comments that you feel would be helpful to improving your access and quality of this presentation.

_____

Appendix O: Encuesta de Acceso

Lea cada pregunta y seleccione la respuesta que mejor corresponda.

	Muy fácil	***Fácil***	***Ni fácil ni difícil***	***Algo difícil***	***Muy difícil***
1. ¿Fue fácil acceder al sitio web?					
2. ¿Fue fácil usar su aparato preferido para ver los módulos?					
3. ¿Qué aparato usó para ver los módulos?_____ _____					

	No fue difícil	***Alguna dificultad***	***Difícil***	***Bastante difícil***	***Muy difícil***
4. ¿Tuve dificultad viendo o participando en alguna presentación, video o encuesta?					

5. ¿Si tuvo dificultad, que le causo problemas? Seleccione todas las respuestas que corresponden.
   A. 1.Pre Prueba
   B. 2.Presentaciones
   C. 3.Video empotrados en la presentación
   D. 4.Post Prueba
   E. 5.Other _____

6. Por favor comparta sus sugerencias y comentarios en como podríamos mejorar su acceso y la calidad de la presentación._____

_____

Appendix P: Parent Training Satisfaction Survey

Read each question and select the response that best answers the question.

	Strongly disagree	***Disagree***	***Neither agree nor disagree***	***Agree***	***Strongly agree***
1. I would recommend this training course to a friend or colleague.					
2. The content matched what I expected.					
3. The information I received in the training course was new to me.					
4. I feel the information I received in the training is actionable.					
5. I am confident in my ability to apply what I learned in the training at home with my children.					

6. What did you find particularly useful about the training?

__ Content presented
__ Video presentation
__ Videos
__ Questions during the presentation
__ Other _____

7. What do you feel needs to be improved?

__ Concepts presented (content)
__ Video presentation
__ Embedded videos
__ Questions during the presentation
__ Other _____

8. What else would you have liked to learn about in this training that would help you with your current concerns/struggles/issues? _____

9. What was your general impression of the parent training? (length of each module, overall length of program, quality of the presentation, usefulness of the content, usefulness of the downloadable materials, etc...).
10. Any specific module or concept that was especially relevant to you and your child?
11. Any specific module or concept that you feel was not relevant or not helpful?
12. What would you like to see included in a revised version of the training program?
13. Anything you would like to share about your experience or satisfaction with the training program?
14. Is there any other feedback you would like us to be aware of?

Appendix P: Encuesta de Satisfacción de Padres

Lea cada pregunta y seleccione la respuesta que mejor corresponda.

	Strongly disagree	***Disagree***	***Neither agree nor disagree***	***Agree***	***Strongly agree***
1. Recomendaría este curso de entrenamiento de padres a un amigo o compañero.					
2. El contenido era lo que esperaba.					
3. La información que recibí en este entrenamiento de padres fue nuevo para mí.					
4. Siento que la información que recibí en este entrenamiento es útil y práctico y lo puedo aplicar.					
5. Tengo confianza en mi habilidad de aplicar lo aprendido en este entrenamiento con mis hijos en casa.					

6. ¿Que pensó que fue lo mas útil de este entrenamiento?

__ El contenido presentado
__ Las presentaciones de videos
__ Los videos dando ejemplos
__ Las preguntas ofrecidas durante la presentación
__ Otro _____

7. ¿Que cree que se podría mejorar?

__ El contenido presentado
__ Las presentaciones de videos
__ Los videos dando ejemplos
__ Las preguntas ofrecidas durante la presentación
__ Otro _____

8. ¿Que mas le hubiera gustado aprender en nest entrenamiento que hubiera servido de ayuda con su situación en casa? _____

9. ¿Cuál fue su impresión en general del entrenamiento de padres? (duración de los módulos, duración de todo el programa, calidad de la presentación, utilidad del contenido, etc...).

10. ¿Algún modulo o tema en particular le pareció mas relevante a su situación?

11. ¿Algún modulo o tema en particular le pareció menos relevante a su situación?

12. ¿Que le gustaría ver en una versión revisada de este entrenamiento de padres?

13. ¿Que quisiera compartir sobre su experiencia o satisfacción con este entrenamiento?

14. ¿Hay alguna otro comentario o retroalimentación que quisiera compartir?

Appendix Q: Post-Intervention Semi-Structured Interview

1. What was your general impression of the parent training?
    - length of each module (30 minutes)
    - overall length of program (6 semanas)
    - quality of the presentation
    - usefulness of the content
    - usefulness of the downloadable materials
2. Any specific module or concept that was especially relevant to you and your child?
3. Any specific module or concept that you feel was not relevant or not helpful?
4. What would you like to see included in a revised version of the training program?
5. Anything you would like to share about your experience or satisfaction with the training program?

Appendix Q: Entrevista Post Intervención

1. ¿Cuál fue su impresión general del entrenamiento de padres?
    - duración de cada modulo (30 minutos)
    - duración del programa completo (6 semanas)
    - calidad de la presentación
    - utilidad del contenido
    - utlidad del contenido a descargar

2. ¿Algún modulo o tema en particular le pareció mas relevante a su situación?

3. ¿Algún modulo o tema en particular le pareció menos relevante a su situación?

4. ¿Que le gustaría ver en una versión revisada de este entrenamiento de padres?

5. ¿Que quisiera compartir sobre su experiencia o satisfacción con este entrenamiento?

CV

Penelope Johnson
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EXPERIENCE

ABACCA LLC, Miami, FL **01/10- present**
Clinical Director/BCBA 1-10-7314

- Conduct assessments using VB-MAPP and ABLLS and give parent/caregiver interviews.
- Create reports and individualized treatment plans. (FBA, BIP, FAST)
- Design programs to focus on reducing maladaptive behaviors as well as replacements skills and on acquiring new functional skills.
- Implement programs either in-center, in-school, or in-home based settings.
- Offer in service workshops for professionals and seminars for parents.
- Provide required in-field Supervision hours to BCaBAs, RBTs and Behavioral Assistants seeking certification.
- Conduct RBT training sessions in Chile, in Spanish.

UNIVERSIDAD AUTONOMA DE CHILE, Santiago, Chile **03/18- 03/20**
Program Coordinator/Adjunct Professor

- Teach ABA courses in Spanish, as a pre-requisite to the BCBA certification, embedded within the Applied Behavior Analysis Masters program.
- Responsible for communication between the institution and ABAI
- Submit application, maintain accurate records and documentation, and identify course requirements.
- Create course content, ASRs, and testing material
- Coordinate supporting instructors and review their course content

MIAMI ACHIEVEMENT CENTER, Miami, FL **06/10-12/10**
Lead Behaviorist/BCBA/Supervisor

- Provided ABA therapy to children on an individual basis and in a classroom setting.
- Trained teachers to use principles of ABA in classroom.
- Conducted assessments, created individualized programs for the children, and supervised additional behavior therapists working in the school.

BEHAVIOR ANALYSIS FOR KIDS, Miami, FL **10/08- 12/09**
Behavioral Assistant

- Received supervision during 1500 hours in order to sit for the BCBA exam.
- Implemented programs created by supervisor, monitored children's progress and provided training/feedback to parents and caregivers.

FREELANCE, *Miami, FL*, Miami, FL **10/05-10/08**
Behavioral Assistant

- Worked 20 hrs a week with boy diagnosed on autism spectrum.
- Worked as a team with a Behavior Analyst using Applied Behavior Analysis to reduce negative behaviors and teach positive replacement skills

DISCOVERY COMMUNICATIONS- US NETWORKS, New York, NY **06/04– 10/05**
Sr. Manager of Ad Sales Marketing *for TLC, Discovery Kids, Discovery Home Channel, Military Channel, The Science Channel, Discovery Times Channel, Fit TV and Discovery HD Theater.*

- Responsible for brand identity and consistent brand message via marketing communications materials. Ensure consistency of message among individual network consumer marketing departments. Budget of $3M.
- Manage development and execution of events ranging from cocktail receptions to children's activities. Budget up to $5M.

FREELANCE/CONSULTANT, Miami, FL **03/01 – 05/04**

- ShopSpain.com: Managed start-up online company specializing in gourmet foods and products from Spain.
- Venevison: Synapsis. Organized annual conferences for 500 people.
- The Locomotion Channel: Served as liaison between TLC and Spanish cable affiliate.

WARNER CHANNEL LATIN AMERICA, Miami, FL **06/00-03/01**
A Time Warner Entertainment company
Marketing Manager

- Developed, managed and implemented advertising, promotions and events both on-line and off-line to promote brand awareness of network and specific series or programming blocks.

DISCOVERY COMMUNICATIONS LATIN AMERICA, Miami, Fl **10/97 – 05/00**
Marketing Representative& Advertising Sales Planner

- Developed planning strategies for Discovery Channel, Discovery Kids, People & Arts, and Animal Planet. Created and presented media plans for new/existing accounts.

PRICE COMMUNICATIONS, New York, NY **09/95-06/97**
Corporate Development – Assistant to the President

- Investor Relations: drafted press releases, worked with analysts, Investment Institutions and shareholders.

EDUCATION

Doctoral Student (Ed.D)- Johns Hopkins University **2020**

BCBA- Board Certified Behavior Analyst (#1-10-7314) **2010**

M.Ed. - University of Michigan, Dearborn **2009**
Specialist in Inclusion

B.A., Psychology – Princeton University **1995**

Senior Thesis: Positive Psycho-Social Effects of Educational Television Viewing Upon Children

High School Diploma- American School of Madrid **1991**
National Honor Society

*Fluent in English and Spanish. Conversational level Portuguese.